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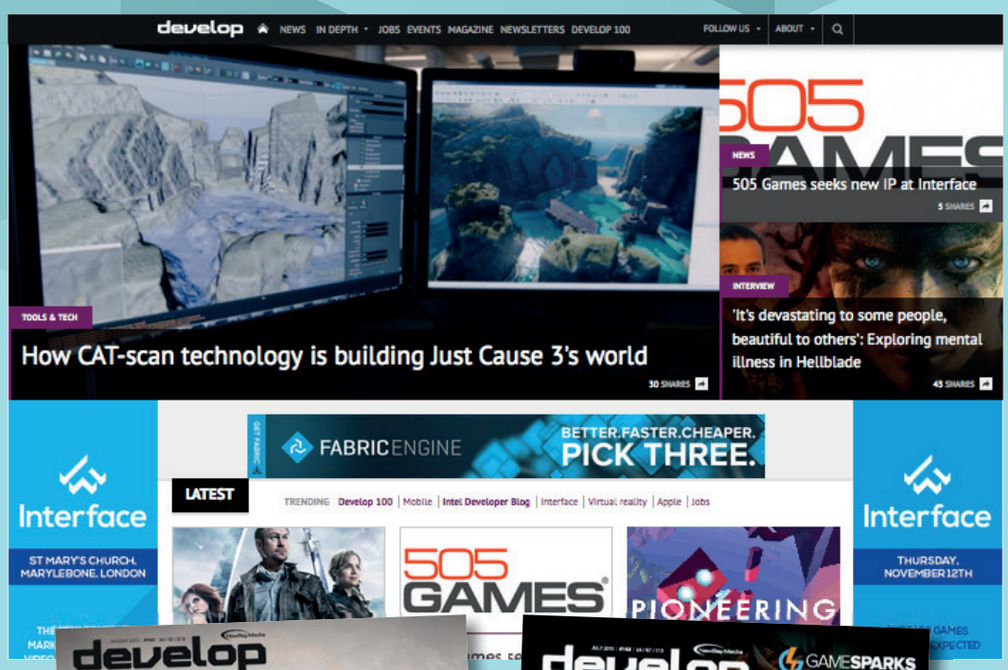
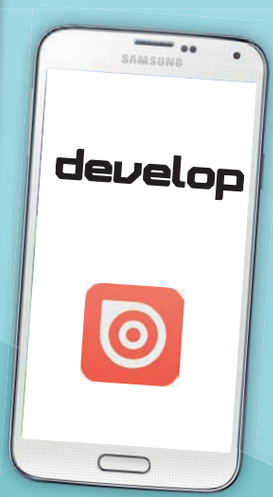
REALITY CHECK

IS IT NOW OR NEVER FOR VIRTUAL REALITY?

INSIDE ▸ 30 UNDER 30 ▪ SALARY SURVEY 2016 ▪ AI IN MAD MAX ▪ VR DEV TIPS ▪ REGION FOCUS: INDIA

EVERYWHERE





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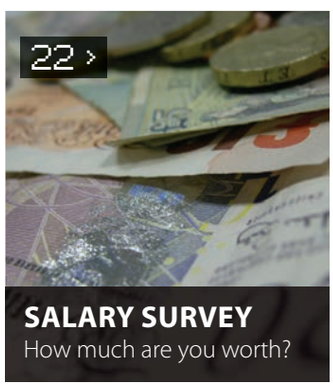
ISSUE 168 FEBRUARY 2016

INSIDE THIS ISSUE

VIRTUAL REALITY'S MOMENT OF TRUTH
With consumer headsets finally on shelves in 2016, the pressure is on for virtual reality – and the developers that have dedicated themselves to it – to live up to the promise of the last few years

30 UNDER 30
Up-and-comers of the industry



SALARY SURVEY
How much are you worth?

AI IN MAD MAX
Bringing madness to life

REGULARS Develop Diary **P08** • #DevelopJobs **P09** • Directory – Spotlights **P40** • Coda **P42**

ALPHA

Reality check **P04**
Devs on VR's next challenge
Joost van Dreunen **P06**
Learning Las Vegas
Shahid Ahmad **P07**
#EatYourOwnDogFood
Diary Dates **P08**
What's coming up?

BETA

Salary Survey **P22**
Money talks – and we listen
Studio Spotlight **P24**
We talk to Sumo Digital
Harder than you think **P26**
The tough art of casual games
Understanding India **P28**
Talents beyond outsourcing

BUILD

Havok AI in Mad Max **P31**
Top Tips: VR **P34**
Heard About **P35**
Maya LT advice **P36**
Inside outsourcing **P37**
Tools Spotlight **P38**
Made With Marmalade **P39**
Unity Focus **P41**

EDITORIAL

WHY 2016 IS VITAL FOR VR

I STILL REMEMBER the exhilaration of my first virtual reality experience: a 90-second space dogfight that left me convinced I had just experienced the future of video games.

But even I was taken aback by the hefty price tag Oculus slapped on the consumer version of Rift that will be in people's homes next month – at least, at first. When the dust settles (and you step away from Twitter), you realise that £500 is only the cost of being an early adopter. As the technology improves, components become cheaper and demand grows, the price of entry will inevitably drop, eventually making virtual reality a mass-market proposition.

Any devs disheartened by the prospect of building VR games solely for a niche, cash-rich audience need to understand the importance of this demographic; these are the ambassadors that will tout the wares of virtual reality to their more reluctant friends and family. It's vital to capture the attention and imagination of these eager early adopters if you hope to grow larger audiences for your future projects.

The biggest opportunity lies before you: to create virtual reality's killer app.

While there are plenty of incredible tech demos and bite-sized games, VR seems to lack that must-have title, the one that perfectly conveys why the technology has had the industry so excited for the past four years.

The word 'innovation' is bandied about this industry all too often, but virtual reality offers the chance to be truly innovative. Seize it. Embrace it. We're all looking forward to seeing what you come up with.

James Batchelor
jbatchelor@nbmedia.com

Reality check

With consumer versions of leading virtual reality headsets finally on the horizon, **James Batchelor** looks at the expectations and pressures VR devs face – and asks whether 2016 really is the year that virtual reality succeeds

2016, MORE SO than any other year before, is quickly being positioned as the year of virtual reality.

With Samsung's Gear VR already available and both HTC Vive VR and Oculus Rift – the device that single-handedly revived hopes of a virtual reality future – due on shelves over the next few months, expectations for the technology to finally prove itself are rising.

But the backlash to Oculus Rift's £500 price tag has highlighted lingering division across the industry as to whether VR really is the be-all-and-end-all that countless tech demos and hefty investments have led us to believe.

Shahid Ahmad, indie developer and former head of strategic content at SCEE, believes it will be the launch titles for Oculus, Vive and PlayStation VR that give us the first true glimpse into the tech's future.

"It's essential that the first experiences in this new medium are positive and captivating," he tells *Develop*. "Day one experiences need to be safe, but thrilling enough to persuade customers that VR is worth the investment.

"Every day one title is responsible for making a statement about what VR is. You want lots of developers to embrace the tech, but you only want to showcase those games that make VR look great."

Kjartan Emilsson, CEO of *EverestVR* creator Sólfar Studios, warns that devs need to hold themselves to a higher standard when it comes to creating early VR titles.

"If anything expectations aren't high enough – at least, on the creative side," he says. "As an industry, we run the risk of underestimating how radically VR will shift player perceptions if we get the initial conditions right in year one."

Pic © www.flickr.com/photos/officialgdc

NDreams CEO Patrick O'Luanaigh adds: "I'm convinced that VR is going to be successful, but it is going to take a while. It seems natural that VR will see primary adoption by gamers, but you can expect it to spread into education, training, and many other industries in relatively short order – certainly within the next few years.

"With so many huge companies and investors behind VR, and such a great reaction to it from the public when they experience quality VR first-hand, it can only be just the beginning of something very exciting."

> ***"We run the risk of underestimating how radically VR will shift player perceptions if we get the initial conditions right."***
>
> Kjartan Emilsson, Sólfar Studios

GREAT EXPECTATIONS

However, some devs believe hopes are a little too high, with Triangular Pixels' creative director Katie Goode adding that consumers in particular seem to be "expecting the very best content straight away".

"It'll still take time for experiences to be created, for conventions to be developed and for large-scale VR games to be launched," she predicts.

"On normal console launches, the consoles are not announced until they are basically final, and the games potentially only a few months before launch. With VR, the very early prototype devices have been public effectively the entire time they've been in development. It's been an odd cycle for everyone involved."

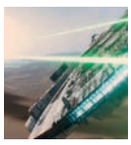
Niine Games programmer Philip Bak adds: "Expectations for VR are so high I fear nothing short of an Apple-sized success will assuage the accountants. A niche sector just isn't going to sustain the industry ramping up around it. Even if it was free there is a good reason adoption would not take off."

Other devs stress that the arrival of consumer devices is not as significant a moment for the VR sector as console launches. The games industry still needs time to find the best experiences that engage large audiences, as well as to gauge public opinion on the notion of even wearing head-mounted displays.

"I don't think anybody working in the VR sector thinks 2016 is 'the year'," says Climax CEO Simon Gardner, whose studio built VR titles *Bandit Six* and *Salvo*. "We are all looking to 2017 and beyond. There should be an installed base to sell into and more content

// MEANWHILE ON DEVELOP-ONLINE.NET

How to keep gamers playing (and paying) beyond Steam's refund barrier
deve1op.net/1ZPiYHu



Ten legal issues to consider when making a film-based game
deve1op.net/1RzqntG

A killer year for Techland: Interview with the Dying Light dev
deve1op.net/1PiMhuD

Above, left to right: Rebellion's Jason Kingsley, Sólfar Studios' Kjartan Emilsson, Strike Gamelabs' Martin Darby, NDreams' Patrick O'Luanaigh and SuperData's Stephanie Llamas

coming on tap that will prove the VR case."

Stephanie Llamas, director for research and consumer insights at SuperData, adds that expectations for VR titles are "exteremely high for small developers".

"Their games need to be exceptional so that once the triple-A guys come in they will still be able to compete," she explained. "Triple-A publishers will be able to throw millions into R&D and marketing in order to sell high quality VR games. Small developers have to gain a lot of industry trust early on in order to keep up with the big industry players."

MORE THAN HYPE

The pressure is on early VR developers to provide what many agree the technology still sorely needs: a killer app, that must-have game that will sell both the concept and the appeal of virtual reality.

"It's absolutely critical that the hardware features a selection of killer apps that demonstrate why VR is a new type of product that does a new type of thing, rather than an 'impressive' but ultimately shallow augmentation," argues Stike Gamelabs' design director Martin Darby.

"The danger is that you can see parallels to how 3D television and cinema was pushed but hasn't taken off."

Rebellion CEO Jason Kingsley adds: "The big issue for me is that all involved need to create experiences that go beyond 'just a gimmick', and into compelling player immersion for a longer period of time."

As daunting as this might sound, Emilsson says this presents a great opportunity for VR studios: "As developers, we need to take the creative leap and craft the intense, surprising VR experiences that prove to ourselves and players that this is real, not hype."

Goode stresses that developers need to keep exploring the possibilities of virtual reality, pushing new design techniques that go beyond everything that has been achieved on console, mobile and PC.

"Just because devices are being launched doesn't mean we know everything there is to know," she suggests. "There's always new stuff to learn, especially with the devices actually in people's hands."

This means continuing to investigate the adverse side effects of virtual reality, such as the ever-present fear of causing motion sickness.

However, O'Luanaigh argues that much of this burden is on the shoulder of VR platform holders such as Oculus and PlayStation.

> ***"VR doesn't need to be mass market in the early days – it just needs to be good."***
> Neil Young, N3twork

"They need to make sure that they clearly warn consumers about horror, vertigo and other extreme emotions which become much more powerful in VR," he explains, "It's crucial that platform holders conduct roadshows so that as many people as possible can try VR first-hand for themselves – trying the tech is the most sure-fire way of convincing new users about the merits of this new medium."

THE PRICE IS RIGHT?

The biggest cause for concern about virtual reality's future is price. While mobile devices like Gear VR and Google Cardboard are affordable, high-end tech like Oculus has proved to be more expensive than many were hoping. The £500 revelation sparked much speculation as to whether VR could ever be a mass-market proposition, but Ahmad believes these fears are unfounded.

"Eventually, this tech will be available at lower price points, but there is always going to be appetite for the best experience," he said.

Simon Dean, project lead at Games Foundry, retorts: "The affordability expectation has already been dashed, and the propensity for nausea is likely to dash the expectation of greater immersion. If players can't spend several hours in VR, headsets will soon be on shelves collecting dust."

But the majority of developers seem to be confident that virtual reality is in no danger of losing momentum in 2016.

"It's very clear that VR has tremendous potential," enthuses N3twork CEO Neil Young, "but it seems unlikely that it'll become much more than a core audience phenomenon initially.

"However, it doesn't need to be mass market in the early days – it just needs to be good."

Llamas agrees, adding: "The first year will mostly be a loss-leader and that will be something to keep in mind in terms of funding. However, the developers and platforms that successfully access the largest audience in the beginning will be able to get in front of the industry once it is better poised for profits."

Ahmad concludes: "2016 will be about whetting appetites and delivering glimmers of a future that is very much about VR as the pinnacle of gaming experience. Consumers are smart enough to understand that this is just the start." ■

WHAT WILL DRIVE VR?

THERE IS DEBATE as to whether the key factor in virtual reality's growth will be low-end mobile solutions like Google Cardboard, or the premium devices such as Oculus Rift and PlayStation VR.

Games Foundry's Simon Dean debates whether mobile is really the right fit for the technology: "You're not going to carry your headset on your commute. VR is simply not casual enough," he states.

"At the high-end, the market will be niche, consisting of early tech adopters. That's a small market to develop for, and studios who rush to develop without having the full commercial picture may find themselves struggling over the next few years.

"The poor technology fit of mobile and the limited market size at the high-end are both factors that I'd expect to act against VR gaining long term traction. Right now, the only driver I can see is marketing spend."

Strike Gamelabs' Martin Darby argues that high-end devices will be "more desirable" to gamers, since these offer the best immersion. While this audience might be nice, it is one not aversed to splashing out on the latest tech.

"These VR devices will appeal to the sort that are happy to spend money on expensive hardware, such as consoles and graphics cards, and are more open to defying social norm by completely monopolising one's peripheral vision in exchange for a 'superior' experience," he said.

NDreams boss Patrick O'Luanaigh says that eventually all VR devices will go wireless: "At this point the current distinctions between mobile and high-end VR may well become meaningless. However, we probably won't reach that point within the next five years."

Variable declarations

//COMMENT: BUSINESS

Learning Las Vegas

SuperData's **Joost van Dreunen** reveals what lessons the gambling hotspot holds for developers

Expanding outside of the world of games will become a common move for big publishers, says Joost van Dreunen

THERE ARE FEW places in the world tackier than Las Vegas. From the moment you arrive and politely sit through the banter of a chatty cab driver on your way into town, there is a distinct aesthetic that overwhelms the senses.

I can't quite put my finger on it. It may be the enormous fountains at the Bellagio, or that mini Eiffel Tower. Don't get me started on that gold, gleaming Trump building. Las Vegas, it seems, is an innocuous collection of dolled-up buildings, piled together in the middle of the desert.

Inside the casinos, there's a persistent, dull smell of cigarette smoke and thick carpet. Fields of slot machines rattle and blink. Despite being generally eschewed by game designers for their crude mechanics of keeping people in an infinite dopamine loop, casino-style games hold some valuable lessons for the games industry.

ONCE YOU'RE IN, YOU'RE IN

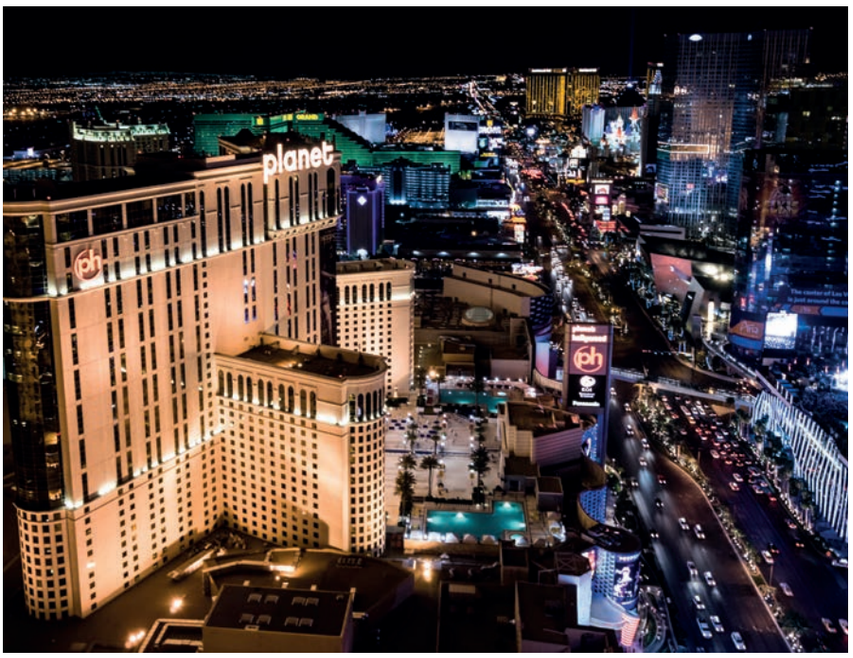
For one, back in the day, gambling tables generated so much revenue that they allowed casinos to offer hotel rooms and buffets for cheap – or even free – to visitors. User acquisition was easy, because who doesn't like getting a free hotel room? Casino operators reasoned that if people don't stay at your hotel, they won't play at your machines and tables, and you'll go out of business. So it was crucial for the different casinos to maximise their traffic. Over time, this led them to offer increasingly outrageous features and add all types of entertainment to draw in customers.

Casinos also became experts at retention. Their very architecture is designed to be confusing. There are no clocks, no direct sunlight and you can't go anywhere without having to pass through a large bank of slot machines, each vying for your attention. Every casino offers an abundance of clothing shops, jewellery outlets, souvenir stores, bars and restaurants. There's a loyalty program for pretty much everything. Keeping people in the casinos, and getting them to spend their money while there, became as important as just getting them to visit in the first place.

You can see where I'm going with this: Las Vegas provides physical evidence of the way underlying economics inform game experiences and design. But here is the lesson in all this: Las Vegas has been changing.

SIN CITY'S SURVIVAL

The economics of offering hotel rooms for free no longer makes sense. Instead, casinos now seek to offer a complete experience: there are world-famous DJs, spectacular



acrobatic performances, celebrity performers and high-brow cuisine – never before had I paid $35 for a plate of spaghetti – all for the sole purpose of entertaining you.

Today, it is the so-called 'resort fees' that are the primary source of income and much less so the money earned from games. No longer do one-armed bandits and roulette tables bring in enough to float the rest. The games, while still a big draw, are – at least from a financial standpoint – increasingly less at the core of Vegas.

> ***"We often talk about the design, development, publishing and marketing of games as if they exist in complete isolation. Which they don't."***

All too often we talk about the design, development, publishing and marketing of games as if they exist in complete isolation. Which they don't. Games are highly contextual in every aspect. But what if games themselves become a sideshow?

Consoles, in their bitter battle over the living room, continue to diversify their offering, hoping to one-up each other with unique content. The same can be said for mobile games. Now that the lion's share of the audience has familiarised itself with the various features of today's smartphones, they've also started to explore non-gaming apps. Games, as we've seen repeatedly, are an excellent way to teach people how a new type of device works, what its strengths are and how to operate it.

While this may seem far away, we have already seen several major publishers change their strategy to become more like media companies, offering a wider range of entertainment beyond purely publishing games. EA expanded its universe by formalising its eSports efforts and putting its COO, Peter Moore, at the helm. Activision recently acquired 'key assets' from Major League Gaming to further build out its tournaments and competitive gaming branch and, later this year, the firm will release its *World of Warcraft* movie.

It is too early to claim that games are no longer at the centre of the games industry. But in an industry where marketing expenses continue to rise in tandem with the pressure of having to always come up with something new and exciting, companies will look to diversify. More precisely, big publishers will look to mitigate risk – and, by doing so, are starting to lean on activities and revenue streams that are not just games. ■

Joost van Dreunen is co-founder and CEO of SuperData Research, provider of relevant market data and insight on digital games and playable media.
www.superdataresearch.com

//COMMENT: INDIE

#EatYourOwnDogFood

Shahid Ahmad discusses the biggest challenges of embarking on independent development

IN THE LATE 1980s, I was a big fan of Microsoft's increasing formalism of software development.

I read books like *Writing Solid Code*, *Debugging the Development Process* and the aptly-named *Code Complete*. By the time *Rapid Development* came out, I was a rabid Microsoft fan. I loved their operating systems, loved their APIs and was a believer in their evangelical drive to improve software quality. Long before I became a fan of Steve Jobs for turning Apple around, the only Steves I looked up to were McConnell and Maguire.

The one phrase that stuck in my mind, used by senior Microsoft development staff was: "Eat your own dog food." Like the term 'indie', this term has become somewhat adulterated over the years as, in some quarters, it was stretched to the point of absurdity. There are countless examples through recorded history of a beautifully transformative idea that becomes loathsome because somebody missed the spirit of what was meant and decided instead to resort to fundamentalism. So long as there are people willing to return to the spirit, and not the letter of a transformative idea, the power of transformation will remain.

In 2013, I gave an impromptu talk at EGX in which I liberally quoted Steven Pressfield. His masterpiece *The War of Art* remains one of my favourite books. In it, Pressfield invokes the idea of 'The Resistance'. His premise is that impostor syndrome, or any other manifestation of self-loathing, is a universal force that through the trick of masking itself as 'personal' and not 'universal', sabotages our desire as human beings to grow, to express, to 'flower'. While this applies to anyone engaged in creative endeavours, it also affects anyone engaged in any activity that requires an act of will to perform.

In my talk, I praised independent developers for – as Pressfield describes it – "making a leap for the rim of the bucket". I realise now that I was talking about myself. Sure, it was my personal and professional mission to help as many developers as possible to make that leap but, deep down, I always suspected that once I'd shown enough developers that the leap was possible, my work would be done and, if I had any integrity, I would have to make that leap myself. On December 4th 2015, I made the leap and am now eating my own dog food.

INVENTING THE FUTURE

I'm now in the same boat as a lot of you and I suspect some of you may be interested in my perspective on some of the challenges we might face in 2016 and beyond.

So, in this and future articles, that's what I'll do, with an important caveat: nobody knows the future. That's right, nobody. None of us have the gift of prophecy. Even those people we call visionaries are following Alan Kay when he said: "The best way to predict the future is to invent it."

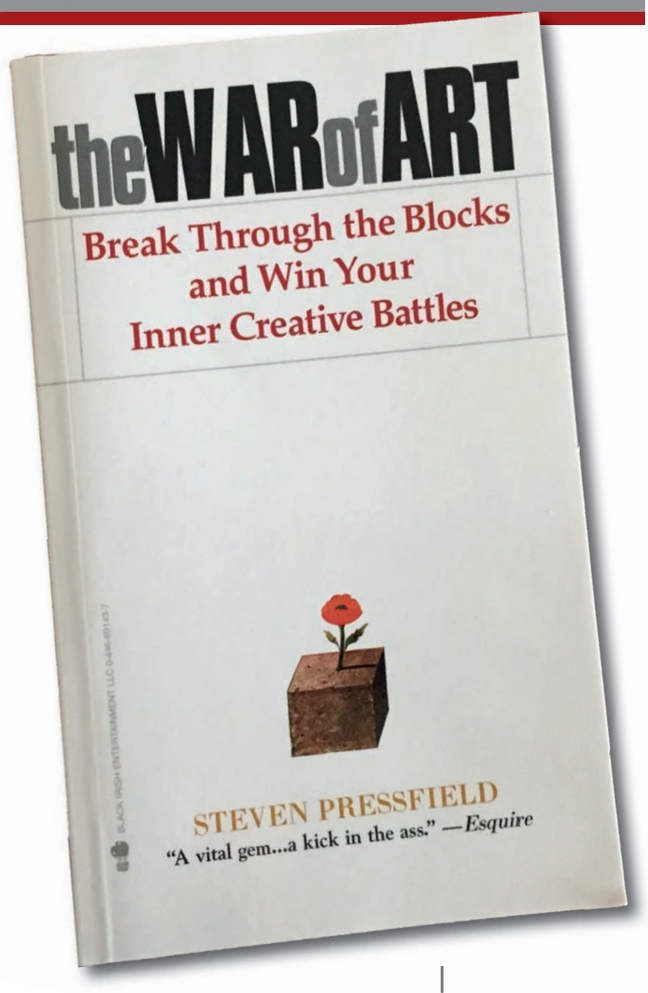
Guess what developers do? That's right: we invent the future. What an awesome responsibility that is.

Why did you get into games development? Was it to make things that people have already played? You see, that's what a lot of games do. Is that really what you want to do?

> ***"Developers invent the future. What an awesome responsibility that is."***

Innovation is a much-abused term, but it's not difficult to be innovative. Innovation is just a play on Paul Smith's strategy of "classic with a twist". You take something that's already been done and add something surprising. Surprise your audience in a way that delights them. It's not that big a deal. Just don't bore them.

In today's world, our audience has more content than they'll ever be able to consume. I'm going to focus on experience. I'm going to focus on tiny nuggets of delight. I'm not trying to change the world – that would be hopelessly arrogant – but I would like to make games that delight my audience, if only for a fleeting moment.


theWARofART
Break Through the Blocks and Win Your Inner Creative Battles
STEVEN PRESSFIELD
"A vital gem...a kick in the ass." —Esquire

Make a leap for the rim of the bucket, says author Steven Pressfield – advice that devs could consider taking on board

To achieve that, I will have to eat my own dogfood and make things that surprise and delight me first. Only then will I have a chance of surprising and delighting one other person. I would be delighted if that was your goal for 2016, too. ■

Shahid Ahmad is an independent developer, and previously head of strategic content at SCEE. You can find him on Twitter at **@shahidkamal**.

//EXTRA CONTENT ONLINE

"A bit of bravery and a frank and positive conversation could save you a lot of upheaval."

When is it right to change jobs?
deve1op.net/1ZPi4eb

"Many women have broken the taboo of technology careers being associated only with men."

A day in the life of a female dev
bit.ly/1mxFuq9

"There's been a realisation that mining the best out of VR isn't entirely straightforward."

Hiring for VR: What to look for
deve1op.net/1OOvMw9

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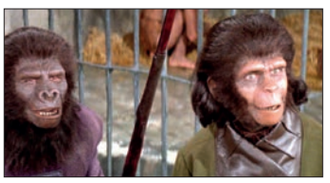
DEVELOP DIARY

Your complete games development events calendar for the months ahead

AT A GLANCE

FEBRUARY 5TH
XCOM 2
2K's unforgiving sci-fi strategy series returns with a PC-exclusive follow-up.



FEBRUARY 8TH
Chinese New Year
Break out *Planet of the Apes* (not the remake) for the Year of the Monkey.

FEBRUARY 9TH
Pancake Day
Flippin' brilliant. Do you make your own batter or use the bottled stuff?

FEBRUARY 14TH
Valentine's Day
Chocolates, roses and sick bags at the ready.

FEBRUARY 16TH
Street Fighter V
Nothing relieves the horror of Valentine's like a relaxing fistfight.

FEBRUARY 23RD
Far Cry Primal
Could this turn out to be the *Jurassic Park* game we've been after?

DIARY DATES

DICE Summit & Awards
February 16th to 18th
Las Vegas, US
www.dicesummit.org

FEBRUARY

INTERACTIVE ENTERTAINMENT 2016
February 2nd to 5th
Canberra, Australia
www.ieconference.org/ie2016

ANIMEX
February 8th to 12th
Middlesbrough, UK
animex.tees.ac.uk

VISION VR/AR SUMMIT
February 10th to 11th
Los Angeles, US
www.visionsummit2016.com

AUDIO FOR GAMES
February 10th to 12th
London, UK
www.audioforgames.net

DIGITAL KIDS CONFERENCE
February 15th to 16th
New York, US
www.digitalkidscon.com

CASUAL CONNECT EUROPE
February 16th to 18th
Amsterdam, The Netherlands
europe.casualconnect.org

MOBILE GROWTH SUMMIT
February 17th to 18th
San Francisco, US
www.mobilegrowthsummit.com

THE UK VIDEO GAMES INDUSTRY
February 25th
London, UK
bit.ly/1OTNpV8

EVENT SPOTLIGHT

GDC 2016

THE BIGGEST DATE of the year for developers around the world, GDC attracts more than 24,000 attendees to the Moscone Center in San Francisco for its famed week-long event.

As well as hundreds of lectures, panels, tutorials and roundtable discussions on a host of game development topics, attendees can visit the GDC expo showcases to view new tools, platforms and services.

Among the many speakers will be Blizzard North co-founder David Brevik, who will present an hour-long Classic Game Post-mortem of his groundbreaking RPG *Diablo*.

New for 2016 is a sister event entitled the Virtual Reality Developers Conference, which will discuss the latest trends and breakthroughs in both VR and AR. Among those set to speak at VRDC will be Epic, Crytek and *Lucky's Tale* creator Playful.

> ***"New for GDC 2016 is a sister event entitled the Virtual Reality Developers Conference."***

As part of GDC Play, there will be a new event called GDC Pitch to allow participants to practise their pitching in front of a live audience.

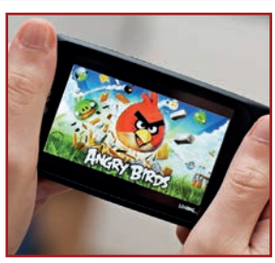
The event also houses the annual Independent Games Festival.

Head to **www.gdconf.com** to find out more. ■

COMING SOON

DEVELOP #169
MARCH 2016

- GDC Issue: Prepare for the biggest event in the development calendar
- VR Special: Exploring the possibilities of virtual reality for devs



DEVELOP #170
APRIL 2016

- The Mobile Issue: We examine why developers are still infatuated with the thriving market – and how you can stand out from the crowd

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#DEVELOPJOBS

Your monthly guide to the best career opportunities in games development worldwide

MOVERS AND SHAKERS

Develop, Playtonic, Ustwo and Mediatonic start the New Year with new hires

P12

'BEING AN ARTIST MADE ME A BETTER DESIGNER'

Outplay's Alex Pass on the benefits of diversifying

P10

RECRUITER HOT SEAT

Sheila Ryan reveals Glu Mobile's big plans for 2016

P11

Artists and coders lead thriving 2016 jobs market

But recruiter Aardvark Swift warns that there is 'no quick fix' for dearth of dev talent, as nearly three quarters of games firms prepare to look for new staff this year

by Matthew Jarvis

STUDIOS WILL BE desperately seeking experienced programmers and artists this year, but may struggle to find talented workers to bring on board.

A recent TIGA survey found that 72 per cent of games companies plan to expand their number of staff in 2016, with 12 per cent expecting their workforce to grow 'a lot'.

However, Ian Goodall, MD of games recruitment agency Aardvark Swift, tells *Develop* that "there simply aren't enough good people to fill the roles out there".

"Recruiting great coders remains a massive challenge, particularly for specialist roles like engine and physics," he explains. "There's a huge demand for C++ coders, as well as C++ coders that can use Unity.

"The newer areas we're seeing demand in are for languages like JavaScript and Hadoop, as the back-end and support systems for games get larger and require more 'non-games' coding skills."

Programming isn't the only area suffering from a lack of experience.

> ***If you're not involved with the next generation of talent, you are missing an opportunity.***
>
> Ian Goodall, Aardvark Swift

"Finding truly talented artists is becoming equally difficult," Goodall continues. "There are no quick fixes in the short term for many studios. It's simply a tough, ongoing battle for the best talent.

"We'll see a rise in VFX and technical art roles for graduate artists."

He adds: "There will also be further growth in areas like data analysis and business information – the market is now really alive to the value of these.

"We're seeing spikes in demand for community and customer service staff as more games move to 'software as a service' and ongoing release models, too."

Goodall advises firms to invest in up-and-coming developers by recruiting graduates as a solution to the lack of experienced workers.

"By looking slightly longer-term studios can help themselves enormously," he says. "There are some amazing code and art graduates now being produced by UK and European universities. The best grads are being snapped up by the most proactive studios.

"If you are a studio and you're not involved with the next generation of talent, you are missing an opportunity." ■

‘Being an artist made me a better designer’

Alex Pass, senior designer at Outplay Entertainment, explains why working outside of your remit and widening your understanding of what’s involved in the entire games development process can help you bring more to your studio

WHEN I WAS five years old I decided that when I grew up I wanted to be a robot.

I soon realised this wasn’t a viable career so, aged six, I thought I’d be probably an architect instead. At eight, I thought making comics might be fun, but by age ten my mind was made up: I wanted to make games. That was a job, right?

Turned out, ‘game artist’ was actually a thing and after studying computer arts at Abertay University, I got my first job as a pixel artist for a tiny indie start-up in the early days of downloadable mobile games.

The next couple of companies I worked for were small too, and I was again hired as a pixel artist, but due to their size there was opportunity – and sometimes necessity – to try something new: “Perhaps you could learn 3D?”, “Can you write the tutorial?”, “We need extra hands on level design.” Now you’re talking. Limited resources meant that everyone had to muck in where they could.

I was given opportunities to collaborate and influence the design, or given design projects of my own, whilst still creating art assets. It helped me get a greater understanding of how the assets would be used by the other developers and how best to provide them.

Over the next few years I transitioned to become more designer than artist.

This presented some difficulty when applying for jobs. That dual role created confusion over what I was – and perhaps what I wanted to be – and so created doubt as to whether I was suitable. I was applying for a design position, but on paper I had always been employed as an artist and my portfolio certainly had more of an artistic bias.

MASTER OF ALL TRADES

During an interview it struck me that I had always been designing. On my path into the industry I hadn’t encountered design as a separate thing, but I felt that this overlap strengthened my primary role. Fortunately, they agreed and I got my first proper design position – although I still would help out with art.

Now a senior designer at Outplay, I find that my previous experience as an artist not only helps in conveying my designs, but also gives me a greater appreciation of the artists’ processes. I can give better feedback than I otherwise could have, offer advice and assist in concepting and problem solving. Similarly, I try to get at least a grasp of how the coders go about things to tailor designs accordingly.

I have to be mindful that I am not an artist anymore and my goal is to support the artists and other developers – I certainly wouldn’t want to tread on anyone’s toes – but I feel it’s important that the team is helping each other out, pushing everyone further and I would hope to receive the same support in return.

Whether a developer is looking to change roles or not, I feel that experience with other disciplines, or even just taking an interest in what’s involved, certainly helps everyone understand each other’s roles and work better as a team.

> ***“Experience with other disciplines helps everyone understand each other’s roles and work better as a team.”***

Whilst Outplay is by far the largest company I’ve worked for – it’s the largest mobile indie studio in Scotland - our project’s team is fairly small so there is still occasional opportunity to assist with minor art tasks and chip in with concept imagery.

Along with tackling the art in our recent game jam, this allows me to scratch that art itch and I’m fortunate and appreciative that I’m allowed to do so.

Maybe in the future I’ll transition back towards art. Maybe I’ll even get to be a robot. ■

Outplay Entertainment is currently hiring. For more information, head to **www.outplay.com/careers**.

RECRUITER HOT SEAT

Sheila Ryan, VP of global human resources for Glu Mobile, reveals the firm's ambitious expansion plans for 2016

What differentiates your studio from other developers?
Glu's track record of delivering exceptional mobile game entertainment across many genres comes from our development philosophy.

It's important to us to take risks and evolve with the industry, which gives our whole team an enormous amount of autonomy and ownership.

Our teams rely on collaboration and teamwork to achieve their goals, so we do everything we can to create a culture of knowledge sharing and flexibility.

How many staff are you looking to take on?
We're positioned for a big year of growth in 2016.

In addition to creating new content for our current hits, our teams are hard at work on more than ten new titles. As such, we'll be hiring to fill positions for both new and existing teams.

What perks are available to working at your studio?
The best part of coming to work at Glu at any of our locations is the people you work with – the development environment truly supports collaboration, creativity and innovation.

Glu-ers enjoy comprehensive compensation and benefits packages, but we're also proud to offer onsite amenities and programmes to keep our teams happy and productive. Each studio has its own culture and identity, with perks unique to that location.

Across all locations, our goal is to encourage organic development of culture and identity. Whether it's Nerf gun battles, mobile beer carts, organic produce, playtests doubling as ice cream socials, fitness classes or ugly sweater competitions, Glu supports whatever makes a team feel like a team.

What should aspiring devs do with their CV to get an interview with you?
Spend time tailoring your CV to the position you're applying for by researching Glu and the role you're applying for. Use what you learn to make your CV as specific and personal as possible. Include links to work that you're proud of – maybe you have a indie project, portfolio or blog.

Also, play some Glu games. You'll have fun, and you'll learn about the work that we're most proud of. You'll be able to demonstrate a genuine interest in Glu and passion for mobile gaming. That's what makes a candidate stand out right away.

Who is the best interviewee you have ever had – and how did they impress you?
Our interview process is designed to give candidates a clear idea of how our teams work together to achieve goals.

Recently, an engineering candidate came on-site for a multi-session interview. His technical acumen was outstanding, but what blew the team away was his open personality and obvious commitment to collaboration and teamwork.

The cross-disciplinary interviews are not easy, but the designers and artists who interviewed this candidate saw immediately that his ability to work with other disciplines was a perfect fit for the studio.

What advice would you give for a successful interview at your studio?
The most successful interviews are with candidates who have prepared throughout the hiring process by learning about the team and role they're applying for.

During the interview, candidates can tap into their skills and passion to demonstrate why there's an excellent mutual fit.

> ***"Whether it's Nerf gun battles, mobile beer carts or ugly sweater competitions, Glu supports whatever makes a team a team."***

We want candidates to leave feeling like they've had the opportunity to flex their skills, but also knowing that their goals align with our future success.

CURRENTLY HIRING

Country: Multiple; HQ in San Francisco, US

Who are you looking to hire?: Glu is currently hiring bright, hungry, innovative people who are psyched about the mobile games industry. Studio roles include designers, product managers, engineers, artists, QA and producers. Candidates looking to make an impact in operations will find opportunities in creative services, business intelligence, finance, human resources, IT, legal, marketing and sales

Where to apply: www.glu.com/careers/ or careers@glu.com

If you have recruited internationally, what is the process like?
We're proud to be a global company, with studios in five countries across three continents.

We're able to consider candidates from just about any locality and can offer relocation assistance and immigration support.

How have your recruitment needs changed at your studio?
Mobile game development is a fast-paced sector. A shorter development cycle, data-driven decision making and diverse audiences makes mobile a truly exciting space to be in.

We've created new positions in all disciplines in response to the ever-changing needs of our development teams.

Why should developers join you when indie and self-publishing have become so much more accessible?
Our developers at each Glu studio are given significant creative authority to make the games they want to see in the market, but are also supported by the leadership and resources of Glu HQ.

Our employees find a lot of satisfaction in the fact that they can develop IP and make decisions with their teams, but also have access to tools, resources and programs that would otherwise not be available to indie developers. ■

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To see our full jobs board, sign up for our jobs newsletter or to post your own job ads, visit: **www.develop-online.net/jobs**

MOVERS AND SHAKERS

This month: Develop, Ustwo Games, Mediatonic and Playtonic

DEVELOP

MARIE DEALESSANDRI has joined *Develop* and its sister publication *MCV* as staff writer.

Dealessandri previously worked for the French news agency ADN Medias after graduating from Sorbonne University in 2012.

Her responsibilities on *Develop* will include coverage of job changes and recruitment news. On *MCV*, she will be responsible for appointment news, managing the publication's release schedule and product coverage.

"Marie is already an experienced journalist with a keen interest in the video games industry," said *Develop* editor James Batchelor.

"I look forward to working with her as she continues to hone her skills and contribute to the growing *Develop* team."

MCV editor Christopher Dring added: "Marie is a bilingual journalist, with an impressive CV that includes radio, online and print journalism, and she's worked in multiple countries. We're lucky to have her on board."

On *MCV*, Dealessandri replaces Matthew Jarvis, who moved to *Develop* as senior staff writer in December.

USTWO GAMES

DAN GRAY has been appointed head of studio at the *Monument Valley* creator.

He formerly served as executive producer for three years, following stints at *No Man's Sky* developer Hello Games and *Fable* outlet Lionhead Studios.

"Fortunately, being successful with *Monument Valley* and *Land's End* has meant we've turned from being a project team within Ustwo to actually spinning out as a new company," Gray told *Develop*.

"Because of that, we have needed pretty strong leadership in order to see that forward. One thing we have to be protective of is that we managed to make *Monument Valley* and *Land's End* from a pretty special way of working, and we need to protect what that is and continue to take risks in areas we want to take risks in.

"Part of my task is to work out how we scale what we have and reach more people without jeopardising what we've created and what we are going to create. It'll be exciting to see whether we can fly the flag of high quality premium games for the future."

MEDIATONIC

Mediatonic has appointed **STUART MORTON** as producer.

Morton previously worked at Mastertronic for 12 and a half years, until the publisher entered administration last December.

He will be responsible for several of Mediatonic's games, including *Foul Play* and *Hatoful Boyfriend*, as well as some currently unannounced projects.

"I am extremely pleased to be joining such a great team at Mediatonic," Morton told *Develop*.

"They have ambitious new plans for creating amazing games and I am very much looking forward to helping make them both a reality and success."

He joked: "I seem to have a thing for companies that end in 'onic'."

Mediatonic CGO Paul Croft added: "Having worked with Stuart over the last few years on *Foul Play*, we're really happy to have him join us here at Mediatonic.

"We're making some substantial investments into new titles over the next year and Stuart will be taking charge of bringing these games to market."

PLAYTONIC GAMES

KEVIN BAYLISS has become the latest Rare alumni to join *Yooka-Laylee* developer Playtonic Games.

Bayliss was formerly graphics director at Rare, as well as one of the *Conker* and *GoldenEye* studio's first employees, before departing in 2005.

Bayliss has already contributed some characters and sketches for *Yooka-Laylee* on a freelance basis, but will now work full-time at Playtonic.

During his time at Rare, he led the visual creation of many of the developer's best-known characters, including those in *Battletoads*, *Killer Instinct* and *Diddy Kong Racing*.

He also collaborated with Nintendo designer Shigeru Miyamoto to create the modern appearance of arcade classic *Donkey Kong* for N64 title *Donkey Kong Country*.

He joins fellow *Donkey Kong Country* artists Steve Mayles, Steven Hurst and Mark Stevenson at Playtonic.

"I'd love to rekindle some of the ideas I've had since leaving Rare," Bayliss said. "I've so many ideas, old and new, so it's going to be great fun filling that little logo-flask with more stars."

PRODUCER OF THE MONTH

In the second of our spotlights on top producers, we speak to Rovio's senior producer Katharina Hautz about crossing from the world of film into games

KATHARINA HAUTZ BOASTS an enviable view of the wider entertainment market, having straddled both movies and games in her career to date.

After university, she worked for seven years at the Berlin Film Festival before joining the Crytek Frankfurt studio, where she worked on *Crysis 2* and *3*, as well as *Ryse*.

"I had been intrigued about the games industry when I worked in films," she says. "There are many similarities about working in those markets with international teams, but there are also a lot of differences.

"But, aside from the technical differences, the biggest similarity is how teams work together. In film and games, people have ideas and opinions, and it is great to see how they collaborate to create something bigger. It is not about ego, in my experience; it is about supporting each other to reach a goal together."

Hautz left Crytek two years ago, and again challenged herself when she moved to Rovio.

> ***"On console, you have very concrete target specs. On mobile, there is an endless list of technical differences."***

"Rovio approached me to work at the Stockholm studio," she explains. "This was completely different again. I had worked with very big teams at Crytek, of up to 200 people. At Rovio, the teams are 20 to 30 people. I was also switching to mobile, whereas I had worked on PC and console formats previously. And, of course, the job was in Stockholm. The idea of living and working in another country was very appealing to me."

Hautz is a senior producer, overseeing *Angry Birds 2* – the second game in Rovio's ultra-successful *Angry Birds* franchise.

There is no such thing as a typical day at the studio, according to Hautz, with the free-to-play sector throwing up its own unique challenges.

"We see updates going live every couple of weeks, so we have to move swiftly to ensure these are stable, and that they arrive on time," she explains.

"The technical diversity is another challenge for us. On console, you have very concrete target specs. On mobile, there is an endless list of technical differences between devices, even from the same manufacturer.

"QA testing is also a big job as we have to work so fast. Rovio has an in-house QA team but we also work with external QA partners."

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EMPLOYEE HOT SEAT

Sergio Delgado, lead programmer at Ubisoft Reflections in Newcastle, talks about the fun and challenges of creating gameplay

What do you do at Reflections?
I am responsible for leading teams of programmers on Reflections' various collaborations and projects.

I frequently meet up with designers and producers to make sure we are all aligned, while keeping coders doing what they best do and enjoy: coding.

I support junior programmers and interns, mentoring and guiding them through their often overwhelming first months in the games industry.

I also have technical responsibilities in AI and gameplay, coding features, hunting down bugs and doing code reviews.

How did you get your current job?
A few years back, I was referred by a programmer, a former colleague in EA, for a gameplay position working on *Driver: San Francisco*. As I lived in Spain at the time, I first had a conference call with the engineering manager and an expert programmer, mostly to find out about each other so I could decide if I would be a good fit for their gameplay team. Days later, I flew to Newcastle for an on-site interview and technical test.

After successfully leading the gameplay team on *Driver: San Francisco*, I was given the opportunity to lead a larger technical team for *Watch Dogs*, during the collaboration with Ubisoft Montreal.

> ***If you have an idea you love, you have the power and autonomy to make it real.***

What perks are available to those working at the studio?
We have several projects running at the same time, so people have the chance to work on various features with differently-sized teams, platforms and technologies.

We have a lot of experienced programmers specialised in different disciplines, so newcomers can learn a lot from the mature industry experts.

What is the recruitment process like at your studio?
We receive CVs from all over the world. Candidates are filtered by technical experts and HR for the different openings we have available. We are also keen to hear from experts who are interested in us, even if the role is not advertised. We have a phone call first, then we bring promising good fits to the studio for a face-to-face interview and technical test.

What was your own interview like?
Very professional and relaxed. An expert programmer and producer interviewed me. They really did everything possible to make me feel comfortable while I was shown the studio and introduced to some of my now friends and co-workers.

We jumped to a meeting room to discuss my previous experience, skills and CV. After that, I completed a technical test, solving some technical problems on paper and then, for about another hour, discussed the solutions proposed with them. At the end, I asked about the day-to-day work, company policies and work philosophy. I left the building exhausted, but very happy and satisfied.

When I am interviewing a programmer, I evaluate how well they would fit in the team. I want to understand their skills and mostly their passion for their work.

What is the atmosphere like at your studio?
Reflections is a creative, hardworking and fun studio. We work on many different projects with different needs; people must be flexible, bold and full of ideas. If you have an idea you love, you have the power and autonomy to push and make it real.

Name: Sergio Delgado
Title: Lead Programmer
Developer: Ubisoft Reflections
reflections.ubisoft.com

SKILLS AND TRAINING

This month: The Games Hub

The Games Hub
Unit 3 Block B,
Knowledge Gateway,
Nesfield Road,
Colchester,
CO4 3ZL

W: www.thegameshub.com
E: amy@eehub.co.uk
T: 01473 527 100

FOR THOSE WANTING to set up and run their very own games company, The Games Hub offers a free 40-week programme led by experts in the field.

The crash course is split into three key areas of development, leading from team formation through the actual creation of a game to QA.

Those who participate are expected to have a complete game or full prototype by the conclusion of the course.

> ***We offer not only training and mentorship in games development, but also in business.***
> Steve Huckle, Games Hub

"Our programme is rather unique, where we offer not only training and mentorship in games development but also have the key difference of doing the same with business," explains Steven Huckle, CEO and founder of studio Shark Infested Custard, who also runs The Games Hub.

"Those taking part learn all about the making and business of the industry, through mentorship from some of the best people in their fields."

The Hub works closely with the nearby University of Essex, and is also hosted in partnership with the Eastern Enterprise Hub.

Other companies that provide support and mentorship include Microsoft, Tundra Games, BDO, Birketts, Colchester Borough Council, Essex County Council, Dlala Studios, Square Enix, Arch Creatives and Kumotion.

The programme is fully funded, making it free to those applicants lucky enough to be accepted. However, students do have to supply their own equipment such as PCs and Macs.

"Sadly, at the moment, we are limited," reveals Huckle.

"What we do give is free serviced office space – along with plenty of tea and biscuits.

"Those taking part are 'guided' in their choice of tools but the final decision is up to them."

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DEVELOPMENT FEATURES, INTERVIEWS, ESSAYS & MORE

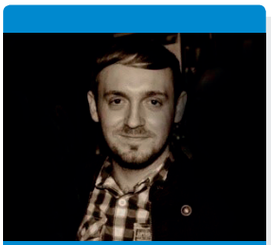
HOW MUCH ARE YOU WORTH?: We examine the results of our annual salary survey
P22

HARDER THAN YOU THINK: Casual games experts offer their tips on keeping players engaged
P26

STUDIO SPOTLIGHT: Inside UK-based Crackdown dev Sumo Digital
P24

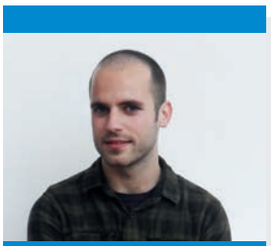
30 UNDER 30

From students and graduates to established developers, there's an abundance of promising young talent out there – and Develop has scoured the globe for the very best. Our latest and ever-popular annual round-up begins on the next page



Josh Naylor
Technical Evangelist, Unity Technologies
Age: 24

Josh Naylor joined Unity after graduating from the University of Hull and has quickly become an integral member of the evangelism team. Throughout the past 12 months, he has travelled around the world to meet the Unity community, speaking at major events such as Unite Europe, Casual Connect Amsterdam and Tel Aviv, Nordic Game, Pocket Gamer and Game Camp Portugal. Described by colleagues as "super smart, kind and friendly" and a credit to his team, Naylor knows the Unity engine inside and out and is frequently ready to help any colleague or developer.



Sam Parras
Programmer, Sumo Digital
Age: 24

A former Bristol University student, Sam Parras was the winner of last year's Search For A Star competition, organised by Aardvark Swift. He is the first to have won both this and its sister initiative Rising Star, having claimed the latter title the previous year. The judges were impressed by both his in-depth knowledge and clear enthusiasm for games development, and his talents attracted the attention – and job offers – of multiple leading studios. He is particularly skilled in C++ coding, receiving the highest score in the competition's opening test, and currently works at Sumo Digital.

Charlie Czerkawski
Co-Founder and Chief Design Officer, Guerilla Tea
Age: 29

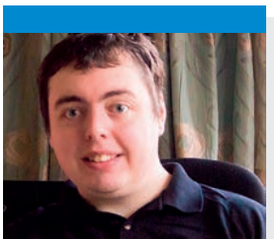
One of the four co-founders of Dundee studio Guerilla Tea, Charlie Czerkawski manages to balance his time between handling the company's external communications and guiding the creative vision of its game design. Overseeing everything from gameplay balancing and level design to creative writing, he has been instrumental in establishing Guerilla Tea as one of Scotland's top studios. He also mentors students at the world-renowned Abertay University and authored an e-book, *Breaking into Video Game Design: A Beginner's Guide*.

Matthew Teague
Game Designer, Marmalade Game Studio
Age: 25

Matthew Teague joined Marmalade as a support engineer back in 2013 and has since worked his way up to game designer, helping to shape the studio's biggest releases. Peers say Teague "quickly proves his worth to everything he is involved in" offering considered and promising solutions to any brief or problems he is presented with. He is happy to tune, tweak and integrate content from other disciplines in order to improve the game he is working on, and has even taught himself new skills such as video editing in order to promote Marmalade's releases.

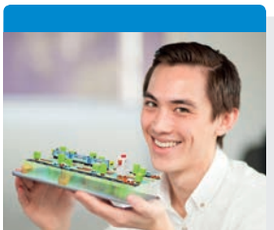
Anna Ljungberg
Senior AI Programmer, Radiant Worlds
Age: 27

Anna Ljungberg came to the UK from Sweden to study AI and was soon snapped up by Codemasters as a graduate programmer. She has since moved to Radiant Worlds, where she is working on the studio's debut title *SkySaga*. She is commended by colleagues for her passion for taking on new things, whether it's different projects or learning new languages. She has also become a role model for aspiring female developers, actively working with Women In Games and promoting the games industry as a potential career path to young people.



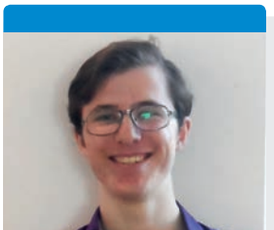
Sam Faulkner
Art Director, VooFoo Studios
Age: 26

During his six years at VooFoo Studios, Sam Faulkner has risen from junior artist to art director, proving himself as a strong artist in both creative and technical fields. VooFoo prides itself on creating games with high quality visuals, and co-workers say Faulkner has "played a very major role in that". His artwork includes the in-game assets for *Pure Pool*, *Pure Hold 'Em* and *Backgammon Blitz*, as well as a "significant portion" of *Pure Chess*. He is now working on VooFoo's upcoming title, due to be announced later this year, which is expected to "raise the bar of visual fidelity several notches further".



Andy Sum
Director, Hipster Whale
Age: 25

Andy Sum is half of Hipster Whale, the team behind hugely popular mobile title *Crossy Road*, which has racked up over 115 million downloads and was the most downloaded free app for both iPad and iPhone in 2015. He has also co-created and released similar games *Shooty Skies* and Bandai Namco collaboration *Pac-Man 256*. Hipster Whale's success earned the studio an Apple Developer Award last year, and Sum himself was invited on stage at Apple's September conference to announce *Crossy Road* for Apple TV. He is described by friends as "an inspiration to the local game development community".

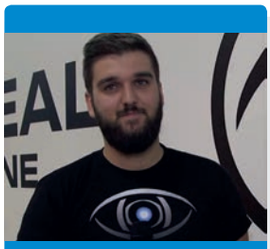


Yan Knoop
Placement Programmer, Sumo Digital
Age: 22

The winner of last year's Rising Star competition, organised by Aardvark Swift and Sumo Digital, Yan Knoop is a graduate of the Netherlands' famed NHTV Breda University of Applied Sciences. In fact, Knoop is the competition's first winner from a university outside the UK and his victory won him an exclusive intern opportunity with Sumo, where he is currently adding to his skills. During the competition, he impressed the judges with his Unity game project *Block Dodger*, achieving the second highest score for gameplay in that round of Rising Star.

Oleg Taliuk
Art Director and Co-founder, EON Games
Age: 29

Co-founder of the Belarus-based studio behind *Fold The World*, Oleg Taliuk began his career at Minsk's 1-ST music TV channel as a 3D artist. His passion for games development soon led him to stints at a variety of studios within the area, including Steel Monkeys, EliGames and D-soft Group. He even spent a year or so working as an architect before helping to establish Eon Games. *Fold The World,* released in November, has racked up more than 2m downloads and was named one of the App Store's best 2015 releases. Taliuk says he always strives to "create something original, unique and memorable".



Joe Brammer
Producer and Owner, Bulkhead Interactive
Age: 23

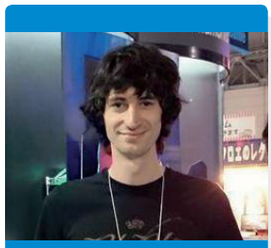
Forming Deco Digital with a group of friends from university, Joe Brammer is a vital member of the team behind first-person adventure *Pneuma: Breath of Live*. The team has earned critical acclaim for *Pneuma*, as well as the kudos of making the first current generation title to be powered by Unreal Engine 4. The success of the title enabled Deco to merge with Bevel Studios to form Bulkhead, where Brammer serves as producer. He is known for his "incredible passion and enthusiasm for game", and is commended for responding well to feedback on his game concepts after pitching them to publishers.

Elisha Brown
Community Manager, NextGen Skills Academy
Age: 25

Elisha Brown is responsible for handling the social media channels at NextGen Skills Academy, the industry-led initiative that launched in the UK last year. She engages with students, industry member and academia, as well as regularly updating the website and working alongside the marketing and PR team. A graduate of Derby University, colleagues say Brown has "a real passion for games" and works closely with young people who are interested in starting careers in the industry, making her instrumental in growing the community around the NextGen Skills Academy.

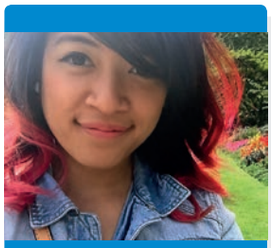
Andrew Bennison
Managing Director, Prospect Games
Age: 26

Andrew Bennison is the brains behind up-and-coming indie studio Prospect Games, as well as a well-known and valuable member of the games development community in Manchester. His team is currently working on *Unbox*, a quirky physics-based game. He has also organised a number of local developer events, from social mixers to indie showcases, and handles the North West game developers' Facebook group. He even gives business talks to students. Praised for his ambition and keen business mind, big things are expected for Bennison in the future.



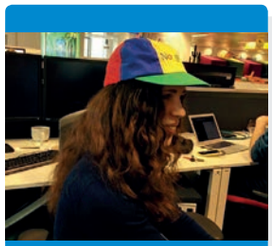
Alex Rose
Lead Developer and Director, Vorpal Games
Age: 24

Tipped to potentially be the next indie millionaire, self-taught coder Alex Rose is an inventive developer who has gone to great lengths to forge connections within the industry. A regular competitor of game jams and winner of Ludum Dare 28's innovation category, he is currently building up to the release of his first commercial game *Super Rude Bear Resurrection* for PS4 and Steam. The title has even garnered praise from Sony's Shuhei Yoshida and Xbox's Phil Spencer, received funding from PlayStation Campus and was nominated as best indie game at last year's Tokyo Game Show.



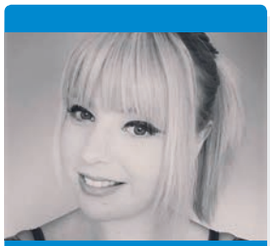
Anisa Sanusi
UI Artist, Frontier
Age: 25

Malaysia-born Anisa Sanusi was a student of Teeside University and currently works at *Elite: Dangerous* studio Frontier. She already has seven released games under her belt, with an eighth on the way in the form of *Planet Coaster*. Sanusi has become an advocate for women to join the games industry, volunteering for mentoring and careers events, working with BAFTA Crew Games and offering feedback on student work at university game jams. One colleagues says: "I've never met anyone more self-driven both in the quality of her art and in her desire to take on new challenges."



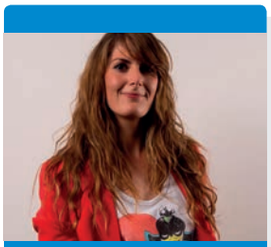
Shanee Nishry
Software Engineer, Google
Age: 26

Shanee Nishry is a self-taught game developer who proved herself to be worthy of a position at Google, where she now works on virtual reality, the new Vulkan graphics API and other technology. Her peers particularly praise her inventiveness and understanding of VR game design, saying her ability to distill best practices for the relatively uncharted sector is "second-to-none". Nishry is also known for her public speaking, offering design advice at Google I/O, ARM's developer days and the Intel Buzz Workshops – she has even been known to integrate her hobby, medieval sword fighting, into her presentations.



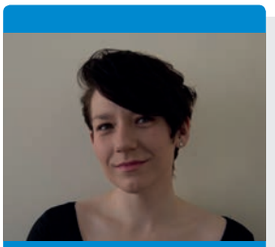
Rachael Gregg-Smythe
Assistant Producer, Ripstone
Age: 27

Described as a "leader, problem solver and innovator", Rachael Gregg-Smythe began her career at SCEE as a functionality tester. She shied away from the world of architecture after she graduated to follow her passion for games, joining Sony full-time. Since then, she has developed her knowledge of game design and quality assurance until she was brought into Ripstone to expand the firm's production department and create a new QA team. In her spare time, she plays an active role in the Women in Games strategy group and mentors young women in the industry. She also dabbles in cosplay.



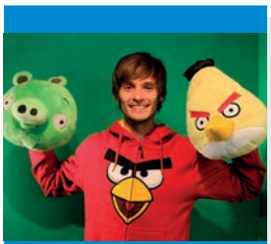
Liz Mercuri
Programmer,
Steel Minions
Age: 29

Liz Mercuri's career is off to a strong start thanks to her selection by BAFTA and Warner Bros as a Prince Williams Scholar to study a Masters in games development. Now in the second year of her course, she has joined Sheffield Hallam University's student-run studio Steel Minions and is working on an educational game for PS4. Mercuri is focusing her research on virtual reality, with published material on VR Focus and other sites, and hopes to create a VR horror title. She has mentored participants in the BAFTA Young Game Designer workshops, as well as local initiative Django Girls.



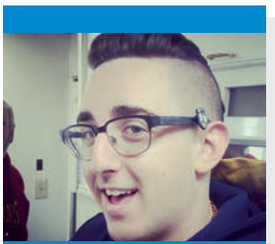
Pamela Peterson
Producer,
Climax Studios
Age: 25

Beginning her career as a QA tester in 2008, Pamela Peterson has already worked her way up through the ranks of QA lead, assistant producer and now producer. She started at her current studio Climax last year and soon took the lead on the PS Vita port of the developer's acclaimed action spin-off trilogy *Assassin's Creed: Chronicles*. She has also released two best-selling Gear VR titles, *Bandit Six* and *Salvo*, and is hard at work on a third, determined to contribute as virtual reality finally becomes widely available to the public later this year.



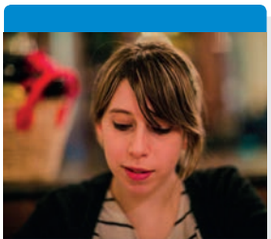
Jonas Johansson
Lead Programmer,
Rovio Stockholm
Age: 29

Jonas Johansson has already built up an impressive CV, with nine years of experience working at *Just Cause* developer Avalanche Studios and German powerhouse Crytek. He currently works at Rovio's Stockholm studio, where he led the programming team behind smash hit mobile sequel *Angry Birds 2*, which launched last summer and racked up more than 50m downloads in its first two months. His keen interest in games development stretches beyond his work in larger studios, as he forms half of two-man team Tiny Cactus and has even tried his hand at composing music.



Matt Conn
CEO,
MidBoss
Age: 28

Matt Conn is known as a major leader in the fight for "the inclusion of queer themes and developers in the games industry". Founder and CEO of San Francisco studio MidBoss, Conn is also responsible for the LGBTQ-focused convention GaymerX, which has been running successfully for three years with over 2,000 attendees at each event. He also produced the "gaymer" documentary *Gaming in Color*. He's a skilled developer, instrumental in the creation of cyberpunk adventure *Read Only Memories*. One peer said: "He fights hard every day to push diversity and shape the culture around him."



Lucy Morris
Lecturer,
Media
Design School
Age: 25

Lucy Morris is a lecturer at Auckland's Media Design School, where she teaches students 2D Art, Game Design and Ethics in Games, as well as helps with the institute's accelerator programmer. She is also the co-founder of the New Zealand chapter of the IGDA, the NRW Game Developers community and local indie Group Pug. Morris set up Women in Games New Zealand and Asylum Jam, a yearly competition to create horror games that do not revolve around negative mental health tropes. She is currently conducting research into romance in games.

Liam Esler
Event Manager,
Game Developers'
Association
of Australia
Age: 24

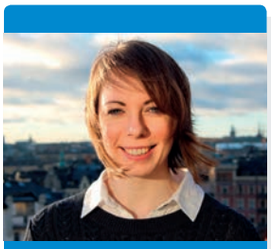
One of the mainstays of the Australian games development scene, Liam Esler has previously worked as a writer, designer and producer at studios such as Obsidian Entertainment and Beamdog, as well as publisher Surprise Attack. Last year he managed the Game Connect Asia Pacific conference, as well as the Australian Game Developers Awards. He also co-founded GX Australia with co-director Joshua Meadows to bring GaymerX to Australia. Esler still has a hand in games development, helping Beamdog with the new *Baldur's Gate* add-on and helping several local indies to ship their games through the Get That Game Done initiative.

Jane Tan
Artist,
Ubisoft Singapore
Age: 24

Nominated as a prime example of an intern becoming a full-blown traditional, Jane Tan has brought her creative vision and talent as an artist to Ubisoft's flagship franchise *Assassin's Creed*. She was responsible for key art assets in 2014's *Assassin's Creed Unity* and over the course of five years has contributed to four more entries in the series, including *Assassin's Creed III*, *Brotherhood*, *Revelations* and *Black Flag*. Tan's talent, and that of her colleagues at Ubisoft Singapore, is a great showcase of why the publisher invests so heavily in global development for its key titles.

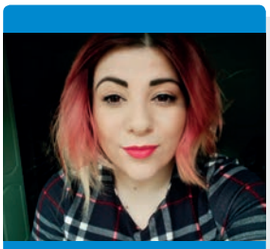
Cherie Davidson
Associate
Producer,
Media Molecule
Age: 25

Cherie Davidson has worked across a wide range of projects over the past 12 months, starting as a programmer on PS4 and Steam title *Wander*. In May, she was awarded the Film Victoria International Fellowship and a placement at Media Molecule, where she helped to complete *Tearaway Unfolded*. Her hard work and keen skills earned her a permanent position as associate producer on an upcoming title. Davidson has also taught at RMIT, chaired the 2015 Freeplay Awards and appeared at events such as the ACER Stem Challenge and Women In Games luncheon during Melbourne International Games Week.



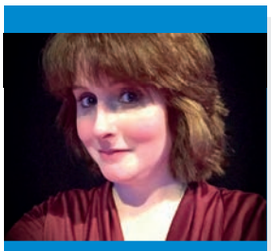
Steph Charij
Designer,
Avalanche Studios
Age: 26

Steph Charij is an alumni of the University of Derby's computer games programming degree and shot to success before her mortar board hit the ground. Her dissertation on the use of real-time biometrics in games impressed *Mad Max* dev Avalanche Studios enough to hire her immediately. It's a role she still holds today, having contributed significantly to Avalanche's games and even earned the studio's internal Most Valuable Player: Passion award last year. One former colleague confesses to mistaking her for a senior designer when they first met – she was an intern at the time.



Alexia Christofi
Production Assistant,
Lionhead Studios
Age: 25

The youngest producer at the *Fable* studio, Alexia Christofi originally joined Lionhead as a production intern. She impressed her superiors so much, they snapped her up as a full-time employee. She is now in charge of the most crucial feature of the studio's upcoming *Fable Legends*: the villain gameplay. Commended for her energy and excitement, she is also knowledgeable about the Agile and Scrum methodologies and their role in games development. She is just as enthusiastic about connecting with players, both through the forums and at gaming events.

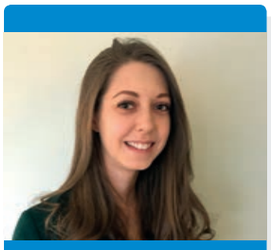


Christie Sandy
Producer,
Team17 Digital
Age: 26

Christie Sandy started her career at Team17 back in 2011 and has risen to become producer on some of the firm's biggest projects. Last year, she oversaw the making of and was a fundamental part of the team handling million-selling indie hit *The Escapists*. Prior to these, Sandy was responsible for the mobile offshoots of the *Worms* series on mobile, which have racked up more than 10m downloads, as well as *Alien Breed*. Colleagues praise her passion for the industry and her dedication to her role, saying she is "a delight to work with".

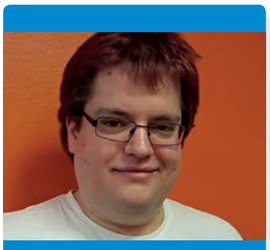
Gina Nelson
Artist,
The Secret Police
Age: 25

A self-taught 2D artist from South Africa, Gina Nelson recently joined The Secret Police, the London-based start-up that has attracted investment from Ian Livingstone, *Terraria* creator Finn Brice and former Sega president Hayao Nakayama. There, Nelson is working on the studio's first title, an unannounced Japanese RPG for mobile. Prior to this, she spent two years working at Relentless Software on projects for clients such as Hasbro and LucasArts. Back in South Africa, she trained as an artist at a games company in Johannesburg, freelancing and even working in comic books.



Helen Bower (née Lauder)
Voiceover Project Manager,
PitStop Productions
Age: 28

Celebrating eight years at services firm PitStop, Helen Bower is a voiceover project manager and handles everything from casting and scheduling recording sessions, to training and developing staff and managing post production, often dealing with scripts that contain thousands of lines of dialogue. Projects she has worked on include games such as *Assassin's Creed: Chronicles*, *Divinity: Original Sin*, *Grid Autosport* and *Binary Domain*. Praised by her clients for striving to deliver the best possible audio, Bower aims for perfection in every aspect, from actor performance to recording and edit quality.



Anton Stenmark
CTO,
Arrowhead Games Studios
Age: 29

Dubbed by peers as someone "destined for greatness in games", Anton Stenmark started his career way back in 2009 as lead programmer at Sweden-based Arrowhead Games Studios. During his first three years, he worked on the studio's biggest successes such as action games *Magicka* and *The Showdown Effect*, as well as top-down shooter *Helldivers*. He was later promoted to CTO for the company and has spent the past three years helping to improve the quality of Arrowhead's games. Outside of work, Stenmark experiments with 3D printing and plays Airsoft.

HONOURABLE MENTIONS

We received an absurd number of worthy nominations this year, but sadly not everyone can make the final list. Here are the other contenders:

Aaron Bridgett, Reflections Abhishek Sagi, Auroch Digital **Abhisake Goyal, Yes Gnome** Adam Boyne, BetaJester **Adam Dart, Team Junkfish** Adrienne Hunter, Tomorrow Today Labs **Alex Norton, Fluffy Knuckleduster** Andy Booth, D3T **Angelika Bugl, Splash Damage** Antonela Pounder, 505 Games **Ashton Anderson, Virtual Basement** Attillo Carotenuto, Himeki **Aurore Dimopoulos, Unity** Basil Lim, BitSmith **Ben Cottage, Splash Damage** Ben Scroggins, Reflections **Bertie Millis, Virtual Umbrella** Boon Keng Goh, Ubisoft Singapore **Brian Beacom, Guerilla Tea** Bryan Yeo, Ubisoft Singapore **Catharina Due Bohler, Sarepta** Chris Randle, freelance audio designer **Christian Frausig, Hammerhead VR** Christophe Malarmey, Ubisoft Singapore **Christopher Robert Wilson, Playground Games** Christos Reid, Creative Assembly **Cian McNabola, Aeria Games** Daniel Thompson, PitStop **Danny Goodayle, Just a Pixel** Danny Hung, Ubisoft Singapore **Dominic Birmingham, Lionhead** Dorottya Kollo, Splash Damage **Duncan Mackinnon, Frontier** Edward Thorley, The Secret Police **Emma Siu, Firemonkeys** Fang Liang Lee, Ubisoft Singapore **Franco Perez, Ubisoft Singapore** Gabriel Pendleton, Baltimore Game Lab **Geoff Newman, Endlife** Grzegorz Reglinski, Simbite **Hannah Bunce, BBC** Hannah Payne, freelance artist **Henry Hoffman, Fiddlesticks** Jack Smith, Splash Damage **Jack Houghton, Sumo Digital** Jack Ward-Fincham, Stainless **James Cubitt, Universally Speaking** Jarryd Huntley, independent **Jesse Busch, Flying Mollusk** Joe Cavers, Rockstar North **John Howe Marshall, Xsplit** John Paul Tan, Ubisoft Singapore **Josh Heyde, Reflections** Junjie Lin, Ubisoft Singapore **Katie Goode, Triangular Pixels** Karl Inglott, Abertay University **Kim Allom, Defiant Development** Louise James, Generic Evil **Louise McLennan, Frontier** Lukas Roper, Opposable Games **Mark Verkerkm, Splash Damage** Matt Skingle, NaturalMotion **Michael Duwe, Modern Dream** Mitchell Clifford, 5 Lives Studios **Nataša Mladenović, Eipix** Nathan John, Gaming Corps **Oliver De-Vine, Ghost Town** Oren De-Panther Weizman, Total-Viz **Paul Leishman, Team Rock** Peter Harris, Butcherlab **Piers Duplock, EeGeo** Ric Cowley, independent **Richard Pring, Wales Interactive** Ron Jones, Indie Cluster **Ryan Staff, Frontier** Sam Browne, NFTS **Sam Gage, The Third Floor** Sara Elsam, Relentless **Shane O' Brien, GameSparks** Simon Vickers, Foundry 42 **Stephen Caruana, Pixie Software** Stephanie Bazeley, Team Junkfish **Steven Verbeek, Crazy Monkey** Stuart Tait, Ubisoft Reflections **Thomas Reisenegger, ICO Partners** Tom Chambers, Reflections **Tom Roberts, Relentless Software** Tony Zhou, Ubisoft Singapore **Tyson Butler-Boschma, ToyBox Games Studio** Victor Gaza, Guerrilla Games Amsterdam **Waiyin Lau, Splash Damage** Yan Lin, Ubisoft Singapore

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OR EMAIL **JLANE@NBMEDIA.COM**

Develop Salary Survey 2016

Hundreds of developers from around the world have once again helped us compile the most comprehensive report on staff earnings in the games industry. Are you getting what you deserve? Take a look at the full results

Average games developer salary

£33,800

THINGS ARE LOOKING up for games developers – and by 'things', we mean their pay packets.

Results from *Develop*'s latest annual salary survey shows that the decline of the past few years has been reversed, with the average developer earning £33,800.

It may not be as high as 2013's average of £34,183 but it's a significant rise from last year's result – and our all-time low – of £31,882. It should be noted these are the median averages in order to ensure high earners and low-income indies did not distort the overall results.

As always, we have also disregarded any results below £14,000, as well as studio head and exec salaries above £100,000, to ensure our results are reflective of the majority of industry salaries. If we added those in, the median actually drops slightly to £33,000.

> ***"The average salary earned by female respondents was less than £1,700 behind the male result."***

If we look at the mean average salary – again, with our aforementioned exemptions – the figure rises significantly to £38,023; the highest result in the last four years. Adding in all entries, it comes in even higher at £38,571.

The results are encouraging and could be a sign that the last few years of developer hardship are, for now at least, over.

We had more 386 developers from around the world complete our survey, and more than half of them – 54 per cent – are employed by larger, more established studios. 20 per cent work at micro studios with a staff headcount of 10 or less. The majority are also self-taught, or have learned through placements and experience, with only 38 per cent claiming to have

HOW MUCH ARE YOU WORTH?

We've filtered our results to work out the average salary for as many development disciplines as possible. In cases where there were not enough UK or overseas responses to obtain an accurate result, we have only listed the global average. Take a look and see what you're worth:

ART
Junior Artist ..... Global: £21,250
Artist ..... Global: £30,740
UK: £31,263
Lead Artist ..... Global: £41,985
UK: £41,230

AUDIO
Audio ..... Global: £29,736
Lead Audio ..... Global: £43,250

CODING
Junior Coder ..... Global: £23,868
UK: £20,063
Coder ..... Global: £36,111
UK: £32,057
Lead Coder ..... Global: £51,085
UK: £47,412

MANAGEMENT
COO ..... Global: £55,625
CTO ..... Global: £58,929
Technical Director ..... Global: £66,880
All *(incl. MD/CEO, Studio Head, Development Director, Creative Director)* ..... Global: £76,598

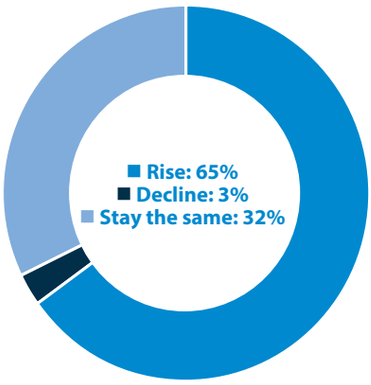
DESIGN
Designer ..... Global: £28,923
UK: £28,256
Lead Designer ..... Global: £41,799
UK: £35,067

PRODUCTION
Lead Producer ..... Global: £37,104
Producer ..... Global: £30,129
UK: £33,123
Production Director ..... Global: £86,508

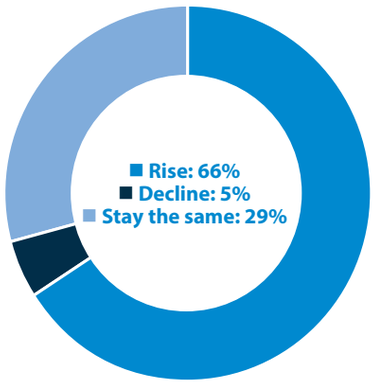
QA
QA Tester ..... Global: £20,866
QA Lead ..... Global: £33,016

OTHER
HR/Recruitment ..... Global: £38,140
Middleware ..... Global: £45,876
PR/Communications ..... Global: £32,433

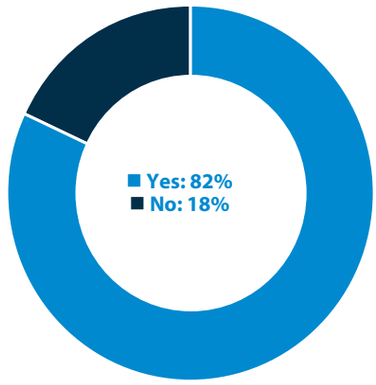
Q IN 2016, DO YOU EXPECT YOUR SALARY TO:



Q IN 2015, DID YOUR SALARY:



Q ARE YOU CONFIDENT ABOUT YOUR CAREER IN 2016?



games-related qualifications, such as a games design degree.

16 per cent of respondents were female developers, a promising rise from the 11 per cent that participated last year, and the pay gap between genders appears to be closing. The median average salary earned by female respondents was £32,000 – less than £1,700 behind the male result of £33,618.

Oddly, the gap reverses when we look at the mean average salary, with women well ahead at £42,382. The male mean average salary came in at £36,930. The most likely explanation for this is we are finally seeing more female developers in senior, exec and management positions.

Taking a look a little closer to home, the median average salary for UK developers is actually slightly behind the global figure at £30,000. If we look at the mean, it rises to £33,932 – just over £4,000 behind the worldwide average.

The US, however, is significantly above the global average salary, with the median result from all Stateside respondents coming in at £50,000. The mean rises even higher to £54,558. Again, this could be a result of more senior staff responding to our survey.

The higher global average is partially the result of the number of developers that received a pay rise in 2015.

66 per cent of participants reported that their salary rose over the past 12 months, up from the 60 per cent we reported last year.

This is expected to continue, with 65 per cent of staff confident that they will receive a pay rise by the end of 2016.

CHANGING TIMES

One in four of our respondents plan to change jobs this year, with a further 45 per cent stating that they hope to move elsewhere within the next five years.

That means just under a third – 30 per cent – are more than content with their current employer and have no intention of leaving.

'New challenge' and 'financial renumeration' were the most common reasons for considering a job change, at 26 and 24 per cent, respectively, while more than half of respondents – 53 per cent – said they would consider moving overseas.

The games industry appears to be an increasingly comfortable place to work, with tales of crunch and rough working conditions at a minimum. The vast majority of developers (78 per cent) work relatively normal hours – between 31 and 50 per week – with 42 per cent working a minimum of 41 hours. Only 4 per cent work more than 60 hours.

That said, nearly half – 42 per cent – say they are expected to work overtime regularly, with an alarming 78 per cent reporting they are not paid for these extra hours.

> ***"The median average salary for UK developers is slightly behind the global figure at £30,000."***

But this hasn't sullied developers' love for what they do.

80 per cent of respondents plan to stay in the games industry for the next five years, with 38 per cent saying they would 'definitely' stay, and 42 per cent saying it was 'very likely'. Finally, 82 per cent said they were confident about their career in 2016. ■

Sumo speaks

We chat to the developer's COO Paul Porter about taking on Crackdown and ask why the studio remains a mystery to many – despite working on some big household names

How would you define the Sumo studio culture?
The culture at Sumo stems from when we started the company in 2003. At the time, many developers in the UK were struggling to survive and it was a difficult time in the industry.

We started Sumo as a group of people who enjoyed working together, loved the games development industry and felt privileged to get any opportunity to make games. We focused on customer service, quality and delivery – assuming that if we did a good job, we'd have more opportunities come our way.

It's a fun place to work. We have a great team who work in a relaxed environment whilst taking responsibility and ownership for what they do.

What titles would you say Sumo is best known for?
For mass market appeal, it's probably *Sonic and All-Stars Racing Transformed* or *LittleBigPlanet 3*. However, the reaction I often get from people when I mention these games is: "Oh, Sumo did that? I didn't realise." We're not really a household name – yet.

Which Sumo game are you most proud of?
As the first game we did, *Outrun 2* has a special place in my heart, but I'm proud of every game we've released.

What's the most exciting thing Sumo is working on right now?
This is a bit like trying to choose between my children. I'm super excited about *Crackdown* and at least three unannounced projects that we'll be able to talk about more in due course.

***Crackdown* is one of the most anticipated Xbox One titles on the horizon. What are you doing to ensure the new one lives up to fans' expectations?**
Personally, *Crackdown* was my favourite Xbox 360 game. We've got some new key features, as revealed at Gamescom last year, but fundamentally the pillars of *Crackdown* remain.

I fully expect it will appeal to fans of the original as well as new players.

How did the *Crackdown* deal come about?
Sumo has been working with Microsoft since the company started in 2003. Most recently, this was on *Nike+ Kinect Training*, *Xbox Fitness* and *Forza Horizon 2*. The executive producer on *Nike+ Kinect Training* was also the executive producer on *Crackdown* back in the day, so we had a foot in both camps. The stars aligned and we were off and running.

What perks and benefits are there to working at Sumo?
We focus a lot on personal growth and development within the studio.

People have the opportunity to work on many diverse projects, from a small team on an iOS/Android title to large teams developing an original game across seven platforms, so there's an ever changing roster of titles and genres to work on.

We've got a great benefits package including life assurance, income protection, cycle-to-work scheme, 24 days of holiday, flexitime and more recently we've started a quarterly Game Jam initiative to promote creativity and give the staff the opportunity to collaborate and create something new and unique.

> ***"We focused on customer service, quality and delivery – assuming that if we did a good job, we'd have more opportunities come our way."***
>
> Paul Porter, Sumo Digital

What are you doing to help bring new talent into the industry?
We've grown from an initial team of 12 people to well over 250 today. Many of those people were new to the industry.

We work closely with a number of universities, where we do talks, mentoring, take placement students, graduates and even PhD placements.

We also take advantage of the great work being done by the Next Gen Skills Academy and we support Grads In Games. ■

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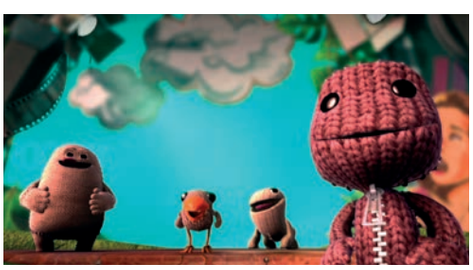

Sumo Digital made its name with racing title Outrun 2 (below) and has since worked on franchises including LittleBigPlanet (above) and Crackdown (above, middle); Left: Sumo Digital COO Paul Porter says the firm isn't a household name yet

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THREE-TIME DEVELOP AWARD WINNERS

Harder than you think

Almost any app can grab the spotlight for a hot minute, but the real secret to success in the casual sector is keeping gamers happily playing – and paying – for months. **Matthew Jarvis** asks King, Zynga, Halfback and Storm8 for their tips

Above: King's Carolin Krenzer (top), Storm8's Perry Tam (middle) and NaturalMotion's Torsten Reil (above)

Right: Candy Crush can be completed without paying a penny, helping it retain – rather than repel – users

STAR TREK: THE NEXT GENERATION has much to offer in way of advice to developers.

From the minimalist design of the Enterprise's panels – ideal for today's touchscreens – to the measured reaction of Patrick Stewart's Captain Jean-Luc Picard to hostile forces – an allegory for effective community management if there ever was one – the beloved sci-fi show is ripe with 'how to' examples for studios.

Casual game designers, in particular, should consider taking the pithy command of Picard as their mantra: "Engage."

It sounds simple and, in concept, it is: the longer gamers play, the more successful a game becomes. If it were as easy in practice, however, the iOS and Android top-grossing charts would offer a fresh set of names every week. Instead, podium staples such as *Candy Crush*, *Game of War* and *Clash of Clans* have become exactly that, with contenders left to scrap over their 15 minutes in the spotlight.

So how can developers help their casual game cross the thin rope between fleeting fancy and financial powerhouse?

PASSING THE STARBUCKS TEST

Perhaps the best place to start is with the definition of 'casual' itself.

It's somewhat of a deceiving term, with casual tropes such as microtransactions and loyalty gifts bleeding into triple-A hits, and mobile devices able to recreate the graphical and mechanical prowess of console efforts.

"In the past, when we thought of casual games we would think of stuff like *Bejeweled*," observes Alex Richardson, design coach at *Fruit Ninja* studio Halfbrick.

"Games like *Flappy Bird* and *Crossy Road* are actually hardcore games in terms of skill, but still feel like casual category."

In fact, Richardson adds, considering your game as merely 'casual' can sign its death warrant before development even begins.

"I don't think that thinking about games as 'casual' is useful in figuring out how to design something," he says.

Torsten Reil is co-founder and CEO of NaturalMotion, which was acquired by *FarmVille* and *Words With Friends* creator Zynga in early 2014. He sees accessibility as the defining feature of a successful 'casual' title – and has an easy way to check.

"The game needs to be playable by pretty much anybody, regardless of their game playing experience," Reil explains. "In addition to that, the game needs to be playable in short chunks. We call it the 'Starbucks line test' – the ability to be immersed in a game in the time it takes for you to order your daily macchiato."

Richardson has his own eligibility test.

"A casual game is something where you can go in, have a play session that's only a few minutes long and that's it – you're done," he states. "You could do a half-hour session, but the point is that if I have two minutes to wait for this bus, I could do a run of *Jetpack Joyride*, *Fruit Ninja*'s arcade mode or a level or two of *Candy Crush*."

PRECIOUS TIME

Of course, you're not looking to capture just 30 seconds of someone's time. A well-made casual game is designed to fill every free space, quickly totalling up to tens or even hundreds of play hours.

To achieve this, the gameplay fundamentals of the title must provide a solid foundation – an aesthetically-pleasing wrapper will quickly disintegrate under the intense scrutiny of dedicated players.

> ***"Thinking about games as 'casual' isn't useful in figuring out how to design something."***
>
> Alex Richardson, Halfbrick

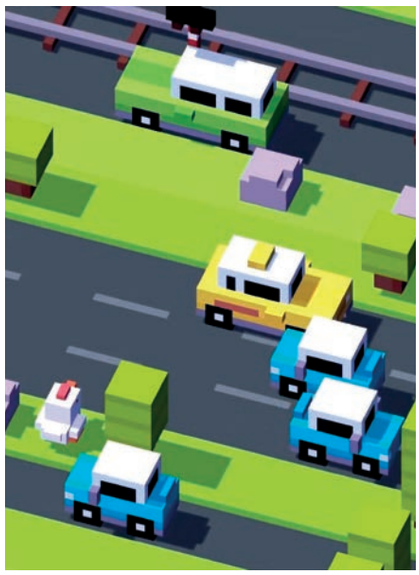
"Having a simple game means making sure that the core game loop is always fun and engaging," says Richardson. "If you can make that loop engaging enough that people are playing it over and over internally while you're developing, that's a really good start."

This is the crux of the design: if gameplay is too simplistic, players will quickly lose interest, but if it's overly complex, it will appear impenetrable and fail to gather momentum. One mobile franchise to have successfully balanced the two seemingly opposed forces is *Candy Crush*.

"A lot of our players choose to play when they want to relax and unwind or just want to spend a few minutes having fun while they're on their commute," says Carolin Krenzer, who is general manager of King's London studio. "Others are more engaged and enjoy the competition or the more complex elements of our games. For example, we run events in our games that allow players to compete against each other, collaborate or to achieve a certain goal in a limited amount of time."

Halfbrick product manager Resa Liputra expands on the necessity to offer something beyond the surface.

"The core mechanic of the game is just packaging – it's a marketing tool for someone to get enticed and check out that game," he advises. "When you're trying to design games today that retain players for a long time, the core loop needs to be good enough that you



Above: Halfbrick's Alex Richardson (top), Resa Liputra (middle) and Adam Wood (above)

Left: Fruit Ninja's arcade mode can be played while waiting for a bus

Far left: Crossy Road is a hardcore game in disguise

do that action over and over without getting bored. It's the meta stuff that keeps you coming back and progressing."

Although it may be tempting to advertise the complexities of a game's mechanics right away, Reil highlights the need to gently ramp up players' understanding of in-game systems – or risk scaring them off.

"Complexity and depth should only unfold once the player is familiar with the game, so it's not necessarily contradictory to early accessibility," he suggests. "With *Clumsy Ninja*, we did 'man on the street' testing with new builds of the game three times a week, over several months."

PAY DAY, EVERY DAY

Keeping players engaged for as long as possible is uniquely vital to the survival of casual games. Unlike full-price PC and console releases, where gamers pay upfront and decide how many hours to invest, the freemium model works on contrary logic: the number of hours invested by players dictates the revenue generated by the product.

Early casual games often forgot that retention runs parallel to revenue, attempting to coerce players into paying for performance-boosting in-game items by placing them at a gameplay disadvantage. Luckily, modern advancements in monetisation have allowed developers to be more lenient with their prospective audience.

> ***"It's critical to listen to player feedback and challenge the status quo to keep the game fresh."***
>
> Perry Tam, Storm8

"It's a lot easier for developers to not be pay-to-win, because they can shift back further to the advertising front," says Adam Wood, lead games programmer and product manager at Halfbrick. "When that first came in, it was banner ads or full screen ads and was really in your face and annoying, but there's now a new approach to it where it's rewarded advertising.

"The advertising and incentivised video route is extremely good because 70 per cent of the casual games user base is teenagers that don't have a credit card."

Liputra agrees that the oft-maligned presence of advertising can be a win-win situation for developers and players, as long as it is treated with respect.

"It's not very different from Saturday morning cartoons when you're a kid and you watch commercials during the ad break," he suggests. "It's forced upon you, but they happened at scheduled breaks and you knew when they were going to occur."

Krenzer offers some insight into *Candy Crush*'s own use of microtransactions, indicating that keeping gamers playing is ultimately more valuable than a potentially damaging cash-grab.

"All of our levels are possible to complete without having to pay for in-game boosters," she reveals. "Our priority is long-term retention of our network of players, rather than short-term monetisation."

NEVER-ENDING SERVICE

Even when the stars align and a game is simple yet deep, monetised yet fair, attractive yet substantial, it's still not time for a developer to breathe easy.

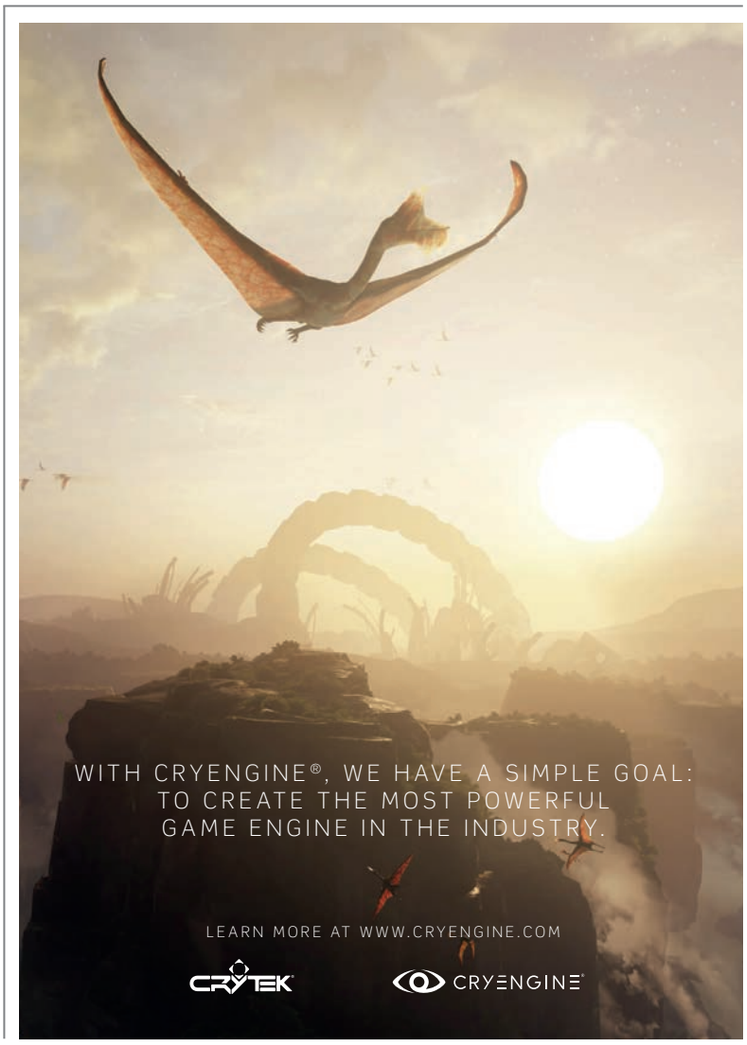
The ongoing state of modern games means that changes will need to be made as time drags on. It may be tempted to double-down on the audience that already exists for a title, but Perry Tam, CEO and co-founder of Storm8, warns that balance must be maintained.

"Even with experience, it's critical to listen to player feedback and challenge the status quo to keep the game fresh," he explains. "Launches are only the beginning. When updating games to improve the player experience, it's critical to remain true to the core, fun gameplay and not unnecessarily add complexity that may only appeal to a limited set of players."

Tam concludes that the magnetism of mobile behemoths continues to grow, making it vital that developers perfect their design before they hit the market – or risk becoming another name in the long footnote of casual gaming history.

"The difference now, compared to several years ago, is that a good portion of the audience has likely played one or more mobile games, which makes it even harder for new games to pull users away from their existing favourites," he observes.

"The quality bar has gone up tremendously. New developers really need to bring something unique to be noticed." ■



Understanding India

Is India's games industry finally coming good as a rising giant of development? **Will Freeman** visits the city of Pune to find out

Sumo CEO Carl Cavers (above) and his team (top) use India's flourishing games development hub as a source of outsourcing – although finding staff can be tough

BRING UP INDIA'S games industry, and you'll likely garner two reactions.

After all, its association with off-shoring and outsourcing has long been pronounced, and its status as an emerging market long-promised as the next big thing is renowned.

In recent years, however, those two clichés have lost a little of what credibility they had. Certainly, India's games industry owes much to its heritage as an outsourcing destination, and one could reasonably argue the nation's anticipated blossoming from emergence to fully-fledged games industry was called a little early by some observers.

Looking at the numbers, however, it's clear that the games making business – and the market that supports it – is growing exponentially in India. As the closing moments of 2015 drew near, Nasscom, the technology and IT trade body for India, published a report that painted a striking portrait of the region's momentum where games are concerned.

Back in 1997, Rajesh Rao set up Dhruva Interactive – generally accepted to be India's first games studio. Some eight years later, the country counted just five studios across its vast geography – rather few in a place home to 1.3 billion people. As time went on, Rao, who also stands as the chair of Nasscom's Games Forum group, saw change come, but at a rate much slower than he had hoped for.

"I've been waiting and waiting and waiting for this market to open, for a very long time," confirms Rao, speaking at the Nasscom Game Developer Conference, to an assembled crowd of local and European press. "Finally, the smartphone revolution is making that happen. The PC never really penetrated to the same level here."

> ***"India's games industry is growing as fast as it possibly can, because the global demand for our services is very big."***
>
> Rajesh Rao, Dhruva Interactive

As Rao explains, PCs and consoles were rarely seen in Indian homes at the very time they were booming in the West and, as such, the vast majority of consumers, government and the tech industries had little experience of gaming. It was barely a blip on the radar. According to Rao, much of the negative associations games attract in the West reached India's shores; perceptions of violence and puerility became persuasive. Playing games, as he puts it, "was frowned upon".

And then the smartphone came to prominence across India.

A SMART MOVE

As smartphones arrived in India, more people played games and got a taste of the modern mobile experience. That, Rao believes, changed the viewpoint of an important cultural hegemony in India.

"Women started playing games – and they are influencers here in India; women and mothers are huge influencers. Once they realised that games are not that bad after all […] we saw a change in mindset."

The result, says Rao, saw attitudes to games change at a government level and in schools. By 2014 there were 140 million smartphones in India. Today, there are believed to be over 200 million, up to a quarter of which are used to play games. Very quickly, things changed in India, and making games already plays an important part in many schools. Walk the floor of Nasscom Game Developer Conference, held late in 2015 in the city of Pune, and it's remarkable how many booths play host to teams making games at school.

"On the development ecosystem side, we ran a program last year among schools, just to see what attitudes were," explains Rao. "We were completely blown away by the amount of interest in game development at the school level."

But before getting too ahead of things, it's worth looking back.

BUILDING SPEED

Come 2010, India's games industry had grown by relative standards. The five studios of 2005 were now 25 in number. Global outfits had set up bases there, with the likes of Zynga and Ubisoft quick to take advantage of booming numbers of tech-literate youngsters. Youth, absolutely, is one of India's strengths; two-thirds of its immense populace are under 35.

At this point, the first indies emerged, and VCs started to circle. Things were moving faster. Casting a lens over India's games industry today, that acceleration continues. Today, 200 games companies call India home, 57 per cent of which are start-up and small teams employing less than 10 staff. India, absolutely, knows what it is to host indies.

For Rao, outsourcing is anything but a dirty secret. Far from it: in fact, it remains the foundation of this thriving development community.

"In terms of revenues, [outsourcing] is not as important as it used to be, because the local market has taken off in a very big way," explains the Dhruva founder, speaking to *Develop*. "I think off-shoring and outsourcing business as a revenue number today would be dwarfed by our growing consumer market. But having said that, that [outsourcing and off-shoring] business is growing as well. India's games industry is growing as fast as it possibly can, because the global demand for our services is very big.

"Make no mistake; outsourcing and off-shoring has bought a lot of knowledge and experience to our developers."

GLOBAL PERSPECTIVE

That success is all well and good, but what does it mean outside of India?

One studio that knows the answer is UK outfit Sumo Digital, based in Sheffield. A specialist in collaborating on high-profile gaming brands such as *Disney Infinity*, *LittleBigPlanet*, *Forza* and *Crackdown*, by 2007 Sumo had to take a careful look at its future. Triple-A games were getting bigger, and putting more financial pressure on all who made them at the time.

"Looking at costs around 2007 or 2008, we started to realise that if we didn't manage our cost profile, then we'd need to run things very differently," confirms Sumo co-founder and CEO Carl Cavers. "So through a combination of outsourcing and needing to manage costs, we started to look at other locations and geographies, including Argentina and Brazil. We thought about South Africa. We looked at Taiwan and Malaysia."

Ultimately, though, Sumo settled on India, impressed by the emerging industry. Not that Sumo's debut in India's tech and education hub city Pune was entirely without challenge.

"When we first came to India, trying to identify the right staff was difficult, because most people came from a background where they had done artwork for video games, but they were used to just doing a very small, specific part of it," says Cavers. "They were used to doing some texturing, a bit of modeling maybe. But we wanted to have people work as an extension of our team in the UK. We wanted matching skills, and people that offered the full package."

That process took Sumo some 18 months, meaning that, initially, the creativity was very much lead by Sheffield.

"Over time, that has changed, and a lot of the creative steering actually comes out of the India studio now," states Cavers.

According to Stewart Neal, the cross-studio development manager for Sumo, increasingly the India office has a greater part to play in many of Sumo's projects.

> ***"India's been ahead of the rest of the world in terms of visual content for a long time – a lot of people don't recognise that."***
>
> Carl Cavers, Sumo Digital

"Previously, they were doing a lot of asset optimisation, polishing and general artwork," he says. "Now, they contribute far more to the full production cycle, from pre-production to finishing the game. The contribution is a fully-rounded one. They're definitely an extension of the UK team. It's by no means a separate entity, and it's really about integrated development."

CINEMATIC IMPACT

Sumo's India operation is absolutely growing. Its headcount has now cleared 50, and as the region's dev talent ramps up in standard, so does what the Sheffield company can achieve in Pune.

Visiting Sumo India, it's a place entirely comparable to typical mid-to-large size triple-A developers in Europe or America. A large spacious office is filled with artists and engineers deep in the creative process. The only real difference is outside the window, where huge birds of prey hang in the air, replaced as dusk falls by huge numbers of giant fruit bats. This is game development as you know it, in a place full of distinction and variety.

India stands as a destination rich in optimism. Cavers, for one, is impressed by the advances in the local industry ecosystem, to the point he has hopes that soon Sumo India will not just be collaborating with the Sheffield team, but tackling entire development projects near-autonomously.

Cavers is quick, too, to remind observers that India is no stranger to creative industries and visual arts. After all, Pune and its neighbouring city Mumbai are home to one of the globe's most successful, established film industries.

"Today, finding talent here is a much easier ask," he asserts. "More and more people have got involved in the industry, and more and more people here recognise video games as a valid career option."

In the early days that wasn't the case, adds Cavers, but Sumo owes much to the influence of Bollywood cinema – a pioneering force in crafting the moving image and an early trailblazer in realms including green- and blue-screening and, to an extent, CG work.

"India's been ahead of the rest of the world in terms of visual content for a long time, and I think a lot of people don't recognise that," Cavers muses.

EDUCATED PERSPECTIVES

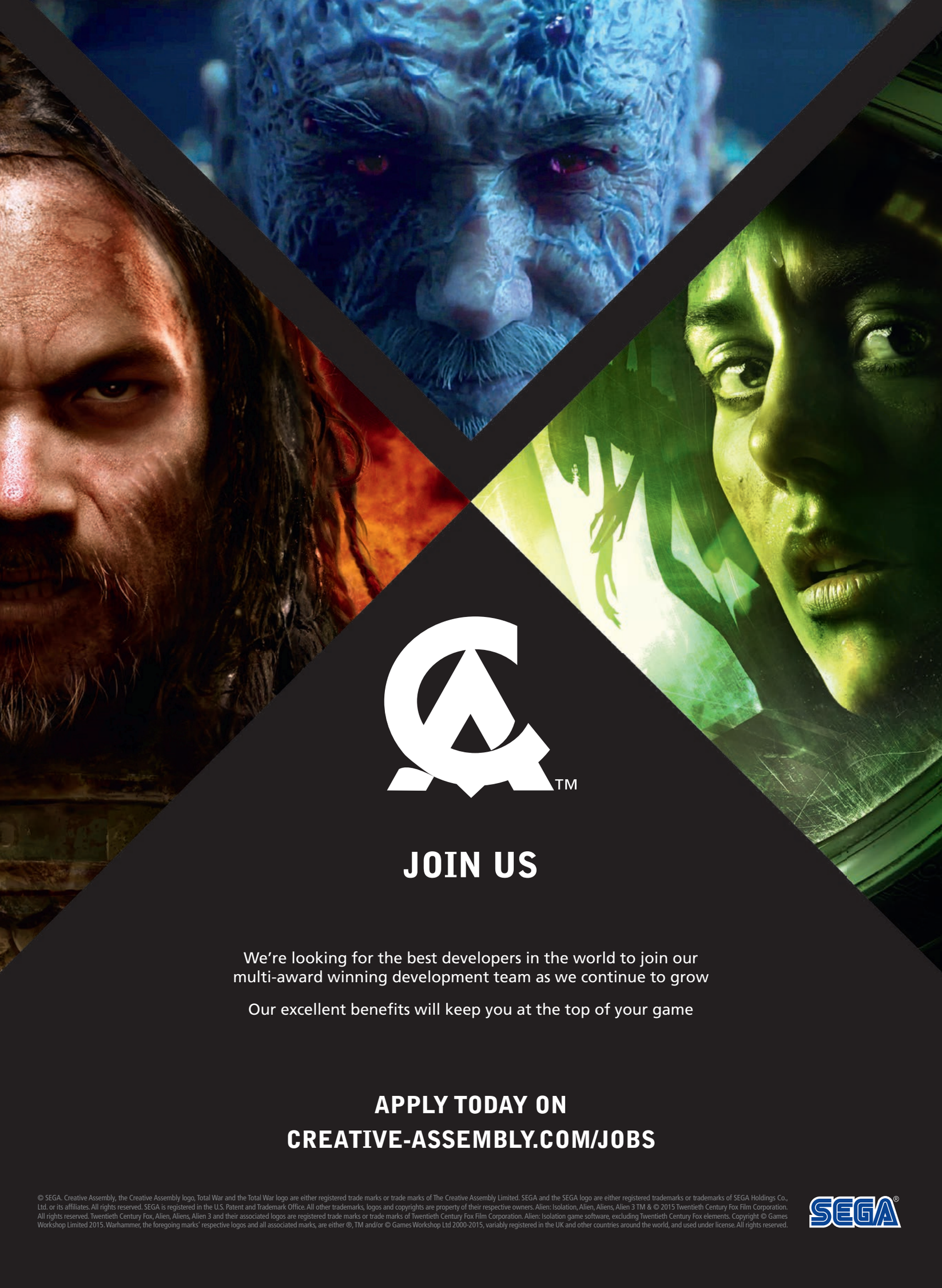
The last word goes to Rao who, in some ways, stands as a founding father of a youthful games industry in a youthful country. His mind is currently on India's game dev educators – when he's not tending to the new Dhruva base in the foothills of the Himalayas.

India's schools and universities, many of the best of which have a home in Pune, are increasingly making games part of their curriculums, and that has Rao very optimistic.

"These are people are being exposed to this at a very young age," he says, back at the Nasscom press conference. "Even if a small portion of these people decide to make games as a career, just imagine the pipeline of talent that is coming to [India's games] industry."

Games as an industry and creative and commercial force may still be emerging in India, and outsourcing still has a role to play, but clearly, things have come a long way in a short few years in this vast and ambitious country. ■

Dhruva's Rajesh Rao (top) and Sumo's Stewart Neal (above) highlight India's development sector as having expanded beyond its outsourcing origins



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P34

UNITY FOCUS
Ustwo Games talks going hands-free in VR title Land's End
P41

Can AI play with madness?

In taking on the world of Mad Max, Avalanche Studios set itself a tough challenge: how to recreate the manic behaviour of its inhabitants. **Matthew Jarvis** asks lead gameplay programmer Stefan Dagnell why Havok and madness make the perfect couple

"IT WAS HARD to know who was more crazy: me, or everyone else."

These words, spoken by Max Rockatansky at the opening of *Mad Max: Fury Road*, encapsulate the movie's warped realm of weaponised dune buggies, bloody violence and spray paint-guzzling villains.

While Avalanche Studios' recent game, also called *Mad Max,* may not be directly based on last year's cinematic outing, it shares much of its DNA with the cult series, with skin-stripping desert winds, high-octane chases across endless sands and bone-crunching combat all coming to virtual life.

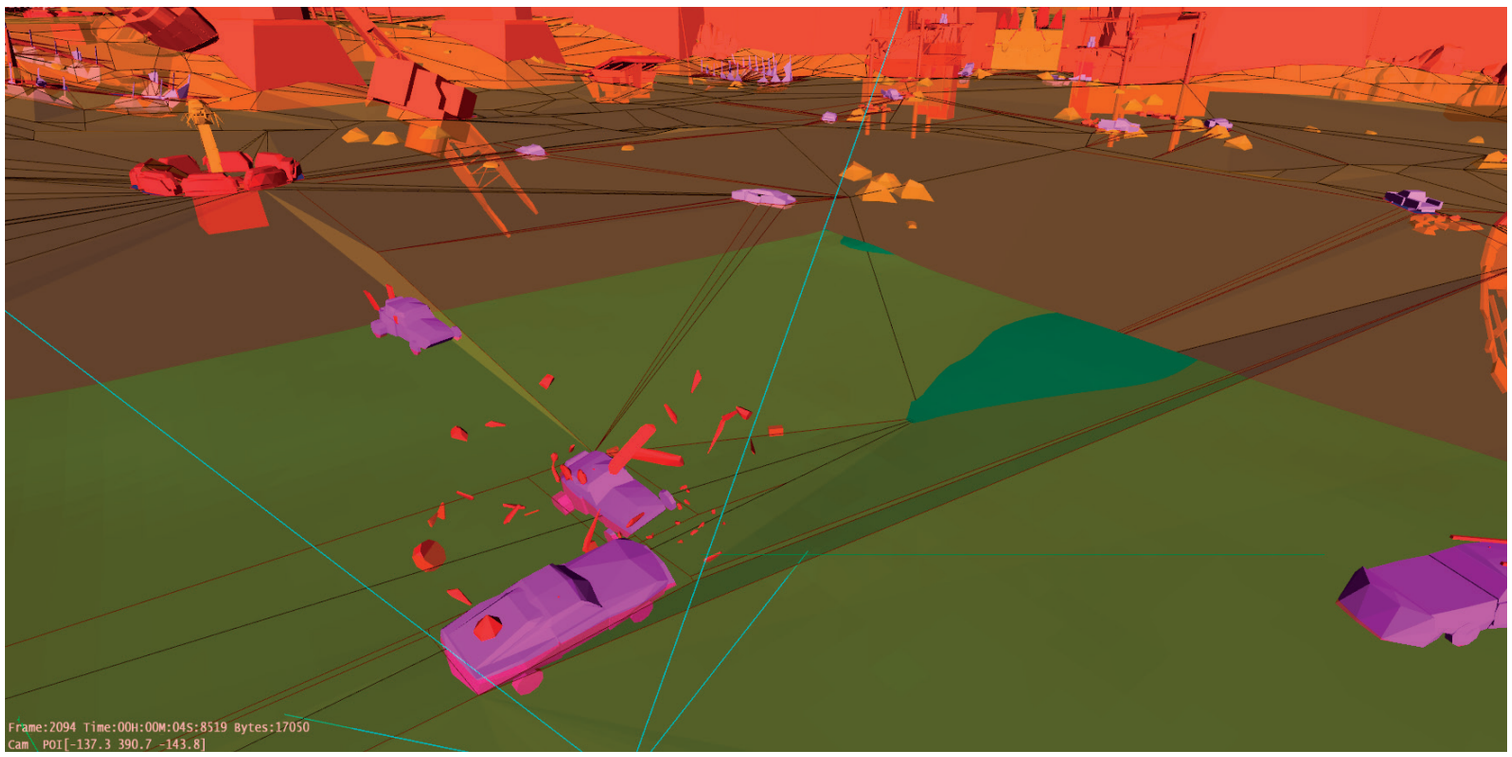
When it came to introducing some sanity to *Mad Max*, Avalanche turned to Havok to implement both physics and AI features. This was of particular importance for the game's heavy focus on vehicular combat, with pathfinding and avoidance and Havok's support for different character radii with a single set of navmeshes – from human characters to mechanical monstrosities – playing a vital role.

"Vehicle AI is the biggest new thing in *Mad Max*," explains lead gameplay programmer Stefan Dagnell. "The only way most enemies can attack is to drive their car into the player's. This requires them to always be able to navigate successfully to them no matter where in the world they are. When doing this, they also need to take into account the other cars to not kill their allies.

"At high speeds we wanted most of the cars to be in camera view to make it more interesting for the player. This meant that the enemy cars had to be able to drive at very high speeds in front of the player without crashing into obstacles or driving off cliffs. For this we relied heavily on the navmesh and obstacle avoidance in Havok AI. Since it supports different agent radii, we could use the same mesh for the vehicles as we do for the characters."

One of *Fury Road*'s show-stopping set pieces is a lengthy chase involving dozens of cars, as well as a fuel-laden tanker, that literally ends in flames. This, too, was something that Dagnell and his team wanted to bring into their virtual world.

Avalanche's Stefan Dagnell says that vehicle AI in Mad Max was designed to keep enemy cars within camera view



Havok's support for different agent radii allowed Avalanche to use the same mesh for both vehicles and characters in Mad Max

"The vehicle convoys are quite unique," he says. "They consist of a big truck with some important cargo and up to six guard cars surrounding it. The guards often need to be able to navigate around the leader, other guards and static objects to get to the player. This has to be done at speeds close to or above 60mph, on unpredictable and rocky terrain, where a single mistake often means losing control of the car. For this, we used Havok AI's avoidance, together with some customisation provided by them."

BORN UNDER PUNCHES

Players don't spend the whole of *Mad Max* behind the wheel. The titular scavenger can also disembark from his vehicle to take a more 'hands-on' approach to dealing with enemies. That is, by punching them in the face.

"The melee aspect of the game put a much bigger requirement on successfully navigating to the player," Dagnell reveals. "In games where the enemies – both characters and cars – use ranged weapons it's usually fine to not be able to perfectly navigate to the player as long as you have line of sight, since it's still possible to deal damage.

"In melee games that require physical contact with the player to deal damage, the enemies have to be able to navigate to the player wherever they are and no matter what the dynamic objects have done to the navmesh. The enemies are also much more visible, since they're closer to the camera – which makes navigation issues less forgiving."

A lone wanderer, Max often finds himself outnumbered when it comes to a brawl. Havok AI helped the team keep things balanced during asymmetrical combat.

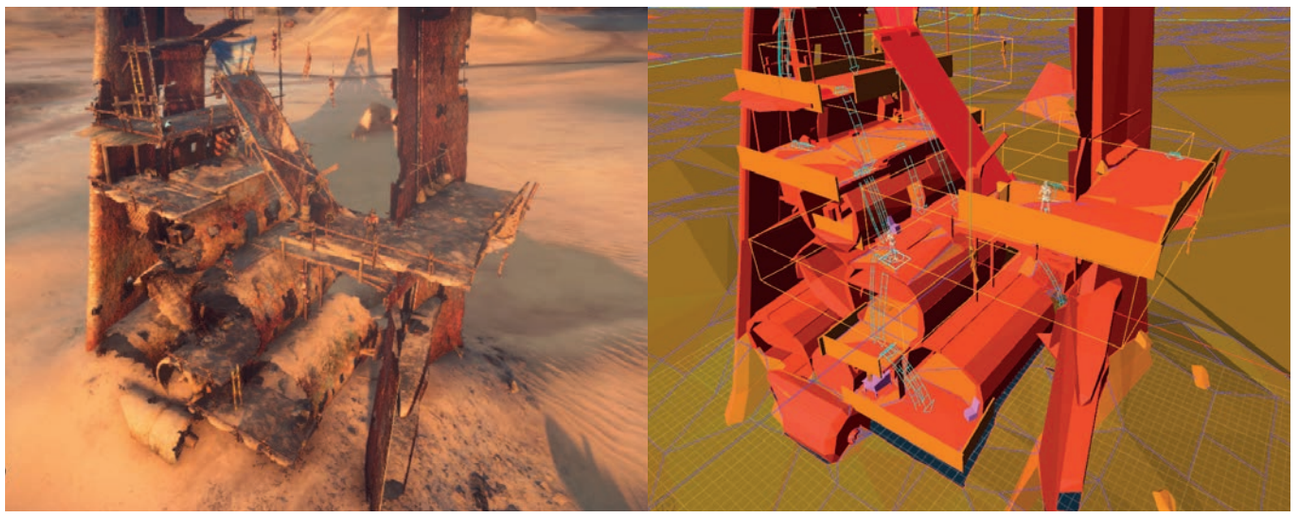
"Another challenge was to figure out where each enemy character should try to position himself during on-ground, melee combat," says Dagnell. "You want them to spread out around the player to get a feeling of being surrounded but still avoid blocking each others' line of sight. They should also prefer to always be able to run straight to the player if they decide to attack. For this we used the raw navmesh data and overlayed a two-dimensional graph on top of it. Each character then calculated a score of how much he desired to occupy each node taking lots of different factors into account, such as distance to the player, other characters, line of sight, current position and so on."

FREEDOM ISN'T FREE

Mad Max isn't the first time that Avalanche has indulged its more chaotic side. The studio made its name with the *Just Cause* series, which, like *Mad Max*, offers an open world to players and allows them the freedom to approach objectives as they want to. Freedom comes at a price, however, with player actions much harder to plan for during development.

"Avalanche games tend to try not to constrain the player too tightly," Dagnell observes. "This means it is usually necessary for us to think in a systemic way, since we cannot predict all the different ways in which features or functionality will interact. That means that we need any toolset to be as customisable and flexible as possible. It is important that we can tune the level of fidelity to balance cost. We also need to be able to be able to change data representations at run-time to cater for any number of ripple effects of the player's actions."

Both *Mad Max* and *Just Cause* take place in environments that span for miles, with players able to roam as they please.



Mad Max's empty wasteland presented more of a challenge when trying to keep mesh memory requirements down compared to Just Cause

However, *Mad Max*'s desolate wasteland presented a fresh challenge in contrast to *Just Cause*'s thriving towns.

"The most basic requirement is support for seamless streaming of the navmesh for different parts of the world," Dagnell recalls. "The system needs to support loading and unloading different parts at any time when the game is running, as well as adding and removing custom edges dynamically.

"Because of the vast view distance it's important that the memory requirement for the mesh is as small as possible. We always have a fixed number of smaller patches loaded around the player, and the less memory they require the larger distance we can cover with the mesh. On *Mad Max* this was especially important, since there aren't that many buildings or other objects obscuring the view since it mostly takes place in a desert.

"Automatically generating the navmesh from the game data is also a must; manually creating it and keeping it up to date isn't feasible at all. Because of the size of the world, this step needs to be fast to avoid long iteration times. The content creators tend to be very creative in how they use the available assets, so it also needs to be robust and support objects intersecting other objects in unexpected ways and arbitrary rotations."

NEW AGE THINKING

Avalanche's games have been acclaimed for their scope, but Dagnell warns that offering complete freedom means that whatever can happen, will happen.

"You have to accept that you won't have full control of everything that happens in the world," he advises. "If the player can block the only exit for the boss using their car it will happen, you need to make sure to handle it some way. This means that you need to rely much more on the navmesh and dynamic avoidance rather than detailed scripting from the level designers."

> ***"If the player thinks an AI should be able to do something, then we should try to make it possible."***
>
> Stefan Dagnell, Avalanche

Mad Max marked Avalanche's first release on the new generation of console hardware. Many players expect their games to look more visually impressive on PS4 and Xbox One, but have their expectations of AI behaviour similarly risen?

"We push ourselves at least as hard as consumer expectation pushes us," Dagnell responds. "Engines, technology and content are crafted to mimic something that is far too complex to realise fully. As the hardware permits, we are faced with the situation where we can remove some of the simplifications or sacrifices that break the immersion the most. These can – and should be – very game specific.

"It's also a question of what the player expects given the context. When you increase the graphical fidelity and the characters look more human-like you also expect more human-like behaviours. This is also true for the level of detail of the environment; characters that don't interact with the environment will feel very disconnected and artificial."

Dagnell concludes by offering his advice to those looking to raise the bar for AI implementation in their games.

"It is easy to get carried away with building AI behaviours, functionality and simulations because it seems important," he says. "Our experience has been that you need quite a lot of insight into what the player experience relies on and should focus on tailoring AI implementation to that.

"There is a flipside though: we often require quite a high degree of systemic thinking – if the player intuitively thinks an AI should be able to do something, then we should try to make it possible. This sometimes results in a high initial investment, but ultimately increases our ability to rapidly add new behaviors or tune existing abilities within the game. The trick is to balance these two competing forces." ■

DEVELOP'S TOP TIPS:

VR REALITIES

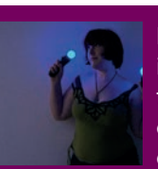
Devs well-versed in the evolving art of building for virtual reality share their insights on crafting games for HMD users

Why not work to virtual reality's advantages and use the best the tech has to offer instead of fighting against it by implementing techniques that used to work for monitors? I see many developers forcing old designs to quickly get something working on VR, rather than moving out of their comfort zones. Instead of just trying to recreate real life, we should create what we can't in reality – that is the beauty of VR.

Ana Ribeiro, Game Designer & Creator, Pixel Ripped

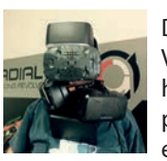
One of the most important aspects of designing for VR is spatial audio. 'Sound is half the image' becomes more relevant now than ever before. The player can look wherever they want, but sound comes from a precise position in 3D space; this triggers our curiosity while making the world feel alive. It is such a powerful tool for game design, especially with the current headphone setup for virtual reality.

Bojan Brbora, Director, 4PM Games



It's of utmost importance to have consistency, otherwise you are asking for player frustration. Players expect to interact with objects as they do in the real world; don't make them non-interactable. Keep tool interactions in the virtual world the same as the real world. Watch out for runaway complexity – for example, adding a knife means players expect it to slice organics in any direction, get stuck in wood and so on.

Katie Goode, Games Designer, Triangular Pixels



Designing for VR means you have to forget pretty much everything known about traditional game design, especially UI and interaction types. The three main concepts to bear in mind are immersion, presence and comfort – always check against these with any changes. Let the user acclimatise before throwing them into the action; for most, it will be their first experience.

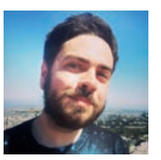
Sam Watts, Game Producer, Tammeka Games

Don't focus purely on first-person viewpoints. There are many other camera views and perspectives that work really well in virtual reality, particularly dioramas. Use your game environment to tell stories and surprise players – give them a reason to peer inside objects, look under desks and explore the world, making full use of positional tracking.

Patrick O'Luanaigh, CEO, nDreams

Design your game around the player, not the player character. In first-person VR, your player is the star of the experience. Gamers experience scenarios as if they were happening to them. With VR you can't say 'your character isn't afraid of sharks' – players inhabit that avatar body but bring their own personality traits. That's exciting. It needs a fundamental shift in outlook from developers; they need to tailor the design to what the player can and can't do, not what a fictional character would do.

Jed Ashworth, Senior Game Designer, PlayStation VR, SCEE



Gaze direction is an important factor; it's essential to consider that your players can look anywhere they like, which can be problematic. Visual and audio clues to direct a player's gaze are absolutely essential, though some people are more responsive to these hints than others. Traditional gamers tend to respond to subtler cues much better than those that don't play games, so do consider your audience.

Dan Page, Marketing Manager and VR Consultant, Opposable Games

Most people playing a VR game right now will be playing it mainly for the VR, so make sure that your game is a great VR experience as well as being a great game. Don't leave them feeling sick or dizzy – make sure it's an ambassador for VR.

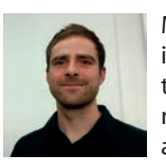
Byron Atkinson-Jones, Game Designer, Xiotex

Scale is very important for compelling VR experiences – it's very easy to notice when things feel off. Keep a ruler or tape measure handy so that you can compare model objects to real world objects and validate the feel of your game environments regularly.

Brian Fetter, Co-founder, Steel Crate Games

Focus on embodiment of the player. Bring as much of the player as possible into the VR experience – head, hands and body, if possible. Players able to exercise natural and meaningful control over their avatar can lead to compelling shared social experiences, allowing for even non-verbal communication to be effective. Also, keeping the player physically active helps facilitate presence.

Adam Kraver, Architect, CCP Games VR Labs



Monetisation is something that has not been addressed fully yet but, as free-to-play trends move into VR, business models will become key in the design of the experiences themselves. Being mindful of how advertising and merchandising can be leveraged in an experience that cannot just plaster a 2D ad on-screen is going to put forward-thinking companies at an advantage.

Joe Stevens, CEO, Whispering Gibbon

HEARD ABOUT

Sixteen for 2016

John Broomhall asks respected sound professionals to share their audio wishlist for the New Year

Improvements to middleware, gender equality and the presence of audio during the development process are all on sound experts' wishlists for this year

SPEAKING WITH THE community, I've managed to identify 16 things game audio people want to see in 2016. Here they are, in no particular order:

1 More cohesive dialogue performances.

2 More projects using a real-time music or hybrid streamed/real-time music approach – projects that push 'procedural music'.

3 Getting further away from 'gamey' sound by bending rules, increasing complexity to the point that the ear can no longer decipher what's going on technically, and creating asymmetry. This will reduce decisions based on game logic and make them more active instead.

4 More stepping away from the screen. Creative ideas don't necessarily happen when you're sat in front of a computer. They happen when the routine is broken and you 'forget' about work.

5 More custom tools to give external sound designers full control over all aspects of adding and testing sound in-game. Plus, more middleware or tools designed specifically for games' non-linear processes and pipelines – especially for dialogues.

6 Engines supplied with more advanced audio features 'out of the box', rather than a bare integration.

7 Generally, more processing in middleware – with greater plug-in choice.

8 Better sound design/game audio workflow support in DAWs. One example is integrated tools for generating sound variants, taking composite chunks of sound design and making them reusable within a session while keeping the source 'live', rather than having to repeatedly bounce things down, pull into a sampler and so on, with all the attendant clunkiness in terms of making changes to earlier stages. Even with simple stuff like naming and export workflows, game dev requirements are very different to those of linear audio folks.

9 Much better DAW and middleware integration, plus tools that integrate sound design and implementation further. There have only been some first baby steps in that direction so far. Just like how ProTools works in films – sound design and 'implementation' (sync to image) go hand-in-hand. Current middleware generally still relies on 'assets' or sound effects to be created externally.

10 Smarter tools that know what you want to do with the audio file you've just imported. The sonic characteristics of a sound can usually give away its intended use. In an ideal world, no-one should have to go through multiple steps in order to get content into a game.

11 Universal adherence to loudness standards across all titles and platforms – TRCs and even runtime enforcement.

12 More cross-disciplinary collaboration. Collaboration is the key to everything, so choose your teammates wisely.

13 That we don't move to a fully subscription-based model for all audio creation software – managing a ton of licences for an in-house team is painful.

14 More women working in audio and the games industry, from management to creative design to programming.

15 More focus on the creative side of development. More games that are fun and innovative creatively – not just games that show off the new tech. A cool idea coming first, then using the technology as a means to achieve it – rather than fitting a game around some technology.

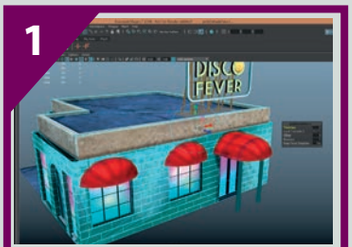
16 Sound involved from the beginning of a project, influencing all parts of the game – even the game tech. Plus, a proper post-production period as with film – it's still the dream. ■

John Broomhall is a game audio specialist creating and directing music, sound and dialogue. **www.johnbroomhall.co.uk**

MAKING THE MOST OF MAYA LT

3D artist **Matthew Doyle** shares ten ways Autodesk's tool enables devs to overcome challenging character creation

1



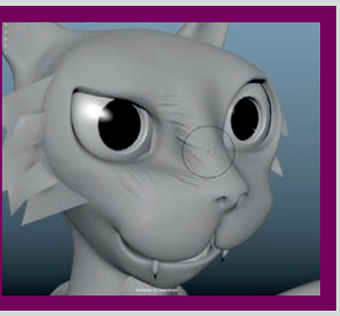
THE MODELING TOOLKIT

This provides quick access to the most important tools, including extrusion, beveling, cutting and welding, along with the quad draw tool for retopology workflows, allowing artists to draw polygons on any surface.

2

SCULPTING TOOLS

These provide an artist-friendly way to build up complex organic shapes. While you won't be sculpting skin pores or small wrinkles, they are fantastic for building up medium-to-large details that make a character unique, such as cheekbones, lips and fingers. Artists can quickly sculpt organic characters, then use the quad draw tool to retopologise it. Each sculpting tool is a duplicate from Autodesk's Mudbox, providing extensive control of how the brush works.



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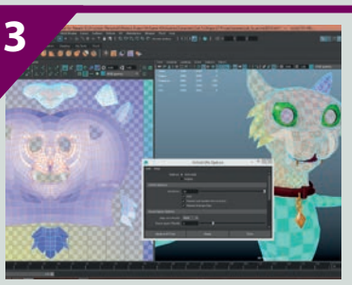
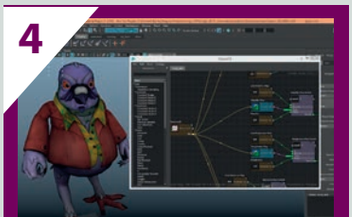


UNFOLD3D

All characters need proper UV coordinates before they're painted. This is the process of taking a 3D object and flattening it out into 2D texture space in preparation for painting. While this process isn't yet fully automatic, Unfold3D integration makes creating character UVs as easy as cutting seams on your character using the interactive cut and sew UV tools, then seeing the UVs unfold automatically after you run Unfold3D.

4



SHADERFX

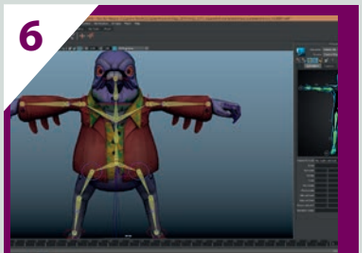
ShaderFX provides a visual node-based workflow for creating real-time GPU based shaders. You'll find every function you'd ever need to create GPU shaders from scratch and even be able to export the shader graph as an HLSL, GLSL or CGFx file.

5

RIGGING TOOLS

The first step in rigging is to create a skeleton, and these intuitive joint creation tools allow this to be done quickly, along with tools for constraining joint movements.

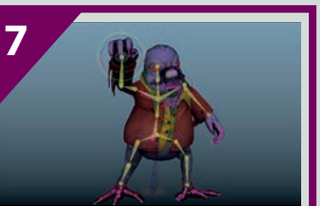
6



HUMANIK FOR RIGGERS

Riggers can use this full body inverse kinematics rigging and animation tool to quickly create a biomechanically accurate character rig that supports features such as retargeting animations from one character to another.

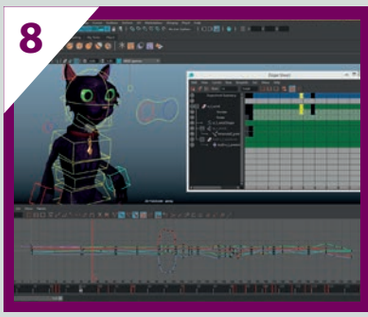
7



HUMANIK FOR ANIMATORS

Animators can create full-body inverse kinematic animation by positioning strategically-located 'effectors'. The rest of the body will move appropriately, staying biomechanically correct.

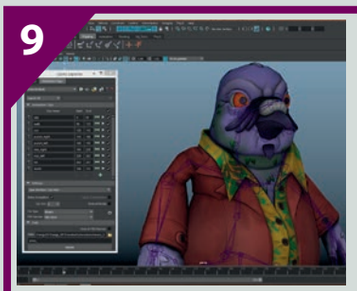
8



ANIMATION TOOLS

Maya LT's animation tools provide everything needed to create compelling and believable animations. The graph editor and dope sheet provide the core tools for adjusting keyframe interpolation and timing, while animation layers allow easier modifications of existing animations. Editable motion trails work a lot like a 3D graph editor, allowing the animator to modify motions directly in the viewport. Ghosting helps animators compare the keyframes of an animation to ensure consistency.

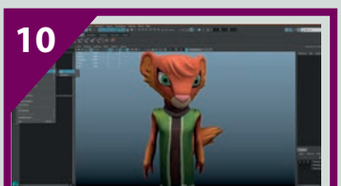
9



GAME EXPORTER

From within the Exporter, you can define individual animation clips or takes, such as walk cycles, idle animations, punches and kicks. The character can be exported as a single FBX file to your game's project folder, including all labeled animation takes, or as a collection of FBX files. FBX options can be set to custom values from within the Exporter as well, and all settings are stored with the project permanently.

10



SEND TO...

You can use the Send To feature to quickly export FBX files to some of the most popular game engines, including Stingray, Unreal and Unity. The FBX format can hold all sorts of data, including the mesh, skeleton, lights and cameras, LODs, and even the ShaderFX shader graph.

THE FUTURE STATE

Inside outsourcing

VMC's **Kirstin Whittle** reveals five common mistakes that impact your perception of bringing in other firms

MANY COMPANIES, EVEN big brands, aren't taking full advantage of their outsourcing process. Considering how much the games industry has changed in the last few years, you should be concerned if your company's outsourcing engagements haven't evolved over the same span.

Here are five critical factors for getting more value from your outsourcing and delivering better products to your customers:

YOU SEE OUTSOURCERS AS VENDORS, NOT PARTNERS

If you're treating outsourcing as a commoditised process and keeping your vendors at arm's length instead of embedding them in the process, you may be missing a lot of opportunity.

Creating a seamless partnership with your outsourcers and strategically involving them in your process enables you to build stronger collaborative relationships and ultimately deliver better products.

YOU AREN'T RETAINING CORE COMPETENCY IN-HOUSE

You want your outsourcers to be partners in your projects, but you don't want them being the brain trust for managing portions of your development process.

Certain activities may not be your team's core competency, but you need in-house people who have a clear, in-depth understanding of the critical work your outsourcers are performing. This protects you if your outsourcing partners can't accommodate your workload or your relationship with them ends.

YOU HAVE TOO MANY EGGS IN TOO FEW BASKETS

Every business is continually evolving, including yours and your outsourcers.

What will you do if your product takes off? What if your QA outsourcers with multiple clients can't ramp up for more testing on your timeframes? Building strong relationships in advance helps you be prepared when you need to be, and allows you to identify which partners deliver the best performance.

> ***"Seamless partnerships with your outsourcers ultimately enable you to deliver better products."***
>
> Kirstin Whittle, VMC

YOU AREN'T CONSIDERING ALL THE OPTIONS

Your outsourcing options go beyond having tasks performed at remote locations.

Explore how other types of outsourcing – onsite staff augmentation, managed services, co-managed services, and pure outsourcing – could be more effective solutions for your needs and schedule.

YOU'RE CHOOSING FOR THE WRONG REASONS

Production support services are best measured on six key factors: quality, experience, cost, speed, scalability and process. In reality, many companies select their outsourcers based on the familiarity of working with a particular person or organisation and accept any limitations on the other five factors.

'If it's not broken, don't fix it' isn't a good approach to outsourcing. Make sure your business decisions are driven by proven performance, not personal preferences.

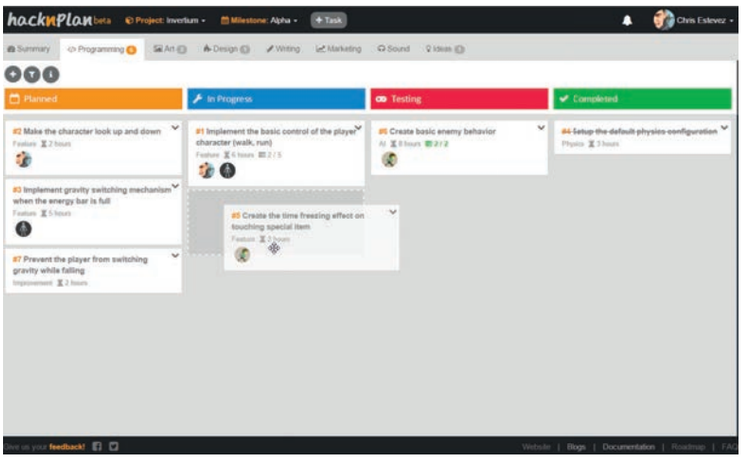
Outsourced services are an essential part of your development process, and strong partnerships enable your team to focus on what they do best while your partners provide expertise for QA and support. By building on your strengths and leveraging your partner's capabilities, your products and customers will benefit. ■

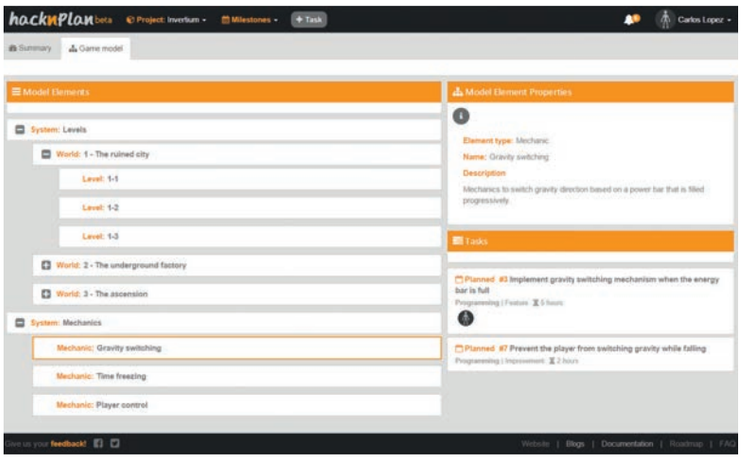
Kirstin Whittle manages business development in Europe for VMC.
www.vmc.com/games

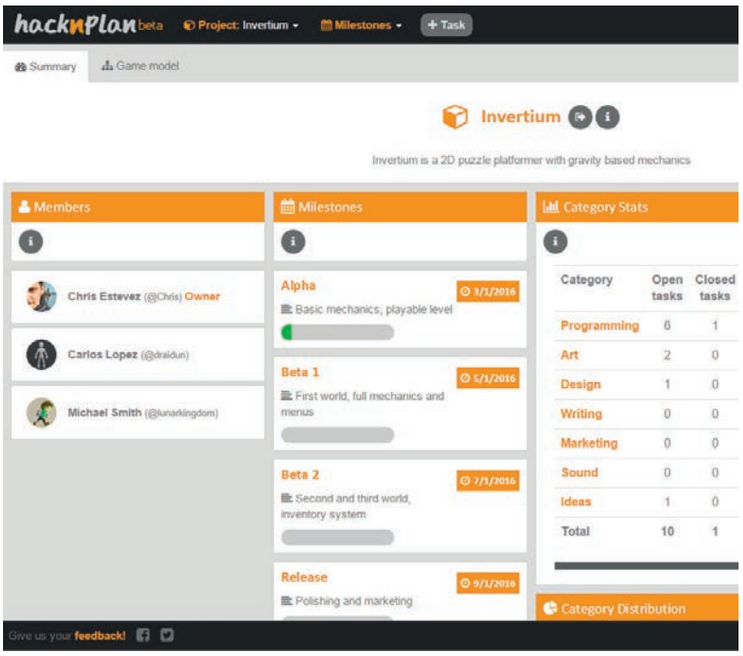
It's easy to become complacent when selecting an outsourcer – but that can limit your firm's efficiency, says VMC's Kirstin Whittle

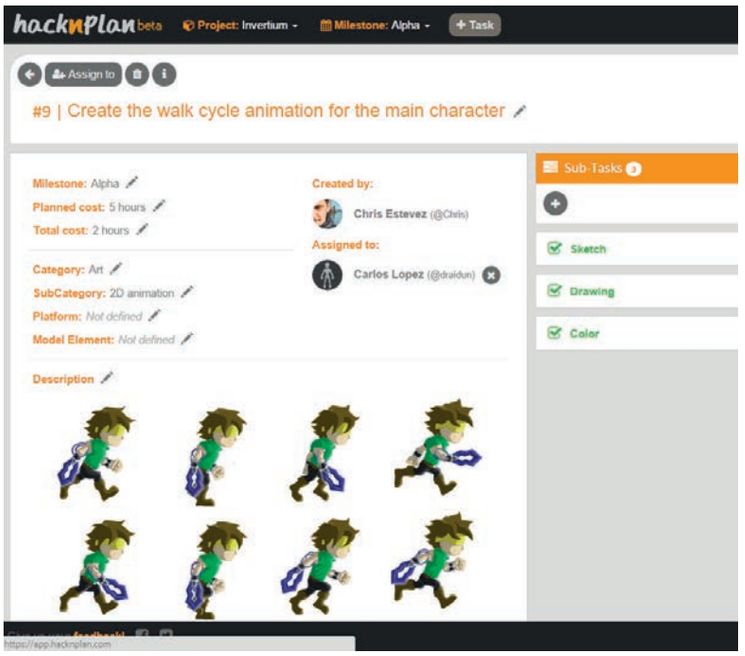
TOOLS SPOTLIGHT

This month: **HacknPlan**









HacknPlan helps developers track their project progress to help them stay on top of their development schedule, and has future plans to add features such as real-time kanban boards and Unity, Unreal Engine and Slack integration

HACKNPLAN IS A cloud-based project planning tool designed for game development with a focus on simplicity and ease of use.

It provides a simple way to organise tasks to do in a game development project, allowing developers to define clear goals, receive an overview and track stats about the overall progress of their project.

The application is offered as a web-based service. It adopts a freemium model; the base application is free, and will have premium add-ons based on subscription. No self-hosted version is currently available, but is planned for release in the future.

One of the key benefits touted by HacknPlan is that the tool is designed and pre-configured to fit a common use case, which reduces setup time and boosts efficiency and organisation.

The software also provides a special feature called Game Model, that allows the user to define the conceptual structure of the game as a tree, including nodes such as systems, menus, levels, locations and characters, and assign tasks to them.

"The tool is quite new so no big studios have used it yet," says Chris Estevez, the web and indie game developer who created HacknPlan as a personal project.

> ***"Our current users are mainly small indie studios and developers that switched to HacknPlan after not being satisfied with the other popular tools out there."***
>
> Chris Estevez, HacknPlan

"Our current users are mainly small indie studios and developers that couldn't find the perfect tool to use for their projects, so they switched to HacknPlan after not being satisfied with the other popular tools out there."

In the future, Estevez says HacknPlan will be integrated with widely-used tools in the industry, such as Slack, Unreal Engine and Unity, and will also provide interesting utilities like a GDD editor.

Other features set for addition to the software include attachments, picture display in boards, visual customization, wiki pages, advanced reports, stats and permissions, workflows, scrum support, integration with Slack, GitHub and BitBucket, dederated authentication via Google and GitHub, real-time kanban boards and a native mobile application.

As well as himself, Estevez says the tool has been designed by indie game developers and the team behind it is very close to the community, getting feedback and ideas directly from developers.

"The application is in beta phase and is under heavy development," he says.

"We recently added notifications and many workflow and organisational improvements, like sub-tasks and customisation of categories."

Find out more about the project at **www.hacknplan.com**. ■

MADE WITH MARMALADE

Two tales of triumph

We take a look at prime examples of how the Marmalade Platform can be used to its full potential

Why Marmalade Matters:
The Marmalade Platform helped Aegis Interactive deliver massive mobile battles in *Gods of Olympus*, while Marmalade's own studio demonstrated the GameSparks integration with match-three puzzler *Spinguins*.
www.madewithmarmalade.com

STRATEGY GAMES CONTINUE to lead the way on mobile, and the best way to ensure your title stands out is to offer players bigger and better battles than the competition.

This is the goal the Aegis Interactive team set for themselves when developing the recently released *Gods of Olympus*, inspired by the classic *Age of Empires* games. Aegis was determined to push limited mobile hardware as far as it can.

But when promising such colossal conflicts, Aegis had to ensure the technology *Gods of Olympus* was built on could guarantee the best possible performance. The answer was the Marmalade Platform.

"There's no margin for error," says CTO Jay Abney. "There's no room for 'fat'. Everything has to be as tight as possible – your memory layout, your core game loop, everything has to be optimised.

"[Marmalade] is really, really fast. It's essentially native performance."

The key to this was the open nature of Marmalade and its foundation in C++. More customisable than an off-the-shelf graphics engine, this enabled Aegis to display large numbers of active soldiers and other assets without affecting how smoothly the action is presented.

Gods of Olympus was developed with a combination of Marmalade and Cocos2d-x, giving the Aegis team access to the former's low-level APIs and cross-platform abilities, as well as the latter's ready-to-go framework.

"As we've gone through our development cycle, we've simply replaced, upgraded or added to the parts of Cocos2d-x that would help our application perform better based on our game architecture," said chief design officer Mark Doughty.

"Battles in *Gods of Olympus* often have hundreds of combat units on the playfield at once, so it was a huge help that Marmalade let us work with OpenGL directly for those times when we needed to maximise performance.

> ***"Every megabyte of memory we save is a bunch of animation frames, or a set of art assets."***
> Mark Doughty, Aegis Interactive

"Marmalade has allowed us to make way more efficient usage of our memory than would be possible otherwise and every megabyte of heap memory we save that way is a bunch of animation frames, or a set of art assets."

GETTING IN A SPIN

Marmalade's internal games studio has been demonstrating the platform's various features with its own releases.

A prime example is 3D match-three puzzler *Spinguins* and its use of Marmalade's new cloud services, particularly the integration of GameSparks.

GameSparks is a backend provider that handles player management, social functions, multiplayer, virtual economies and more.

"The GameSparks C++ SDK can be quickly integrated into your Marmalade apps," says studio head Mike Willis. "Configuration takes place in GameSparks' web portal and hooking these into the client-side via requests, responses and messages is easy to do."

Using GameSparks' cross-platform service removes the time, effort and cost of developing your own backend system. The fact that GameSparks is cloud-based means devs can push more game logic to the cloud, allowing them to adapt and tune their titles even after launch.

Spinguins is also a great showcase of how well the Marmalade Platform handles 3D game development, Willis adds.

"Marmalade puts as little code between your game and the bare metal while still offering powerful and flexible 3D middleware APIs," he says. "The middleware is optional, so if you want to squeeze even more from the device, Marmalade also lets you work directly with OpenGL ES.

"The Marmalade 3D Kit APIs and tools let you make the choices that work best for you to achieve optimum results." ■

Aegis' Mark Doughty (top) and Marmalade's Mike Willis (above) say the platform's support for OpenGL can help maximise performance

SERVICES SPOTLIGHT

This month: **Sounding Sweet**

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Sounding Sweet recently opened two new audio production studios in Leamington Spa and grew its workforce to cover more projects

Ed Walker (above) says Guitar Hero and Forza are two of the biggest franchises Sounding Sweet has worked on

WHETHER IT'S THE familiar 16-bit tones of Mario or the immersion offered by the high-definition effects of modern titles, audio has long been one of the defining traits of games. A quality soundscape offers just as much as 60 frames-per-second performance and razor-sharp controls.

Sounding Sweet is an independent recording and audio production company that specialises in games. The firm's facilities near Stratford-upon-Avon include a 7.1 surround sound-dubbing suite with two voiceover and Foley studios.

"*Guitar Hero Live* and *Forza Horizon 2* for Xbox One are two of the biggest projects we have had the pleasure to work on in the world of gaming," recalls technical director and MD Ed Walker. "We provided predominantly sound design services, but also assisted in other areas of audio production, such as mixing, field recording and music editing."

It's not just triple-A games that the firm helps to get heard, either.

"We supplied Chester Zoo with the sound design and audio production for its new 'islands' park, and last month we were out in Bahrain, where we provided the sound design, music editing and mixing work for the new BMW 7 Series launch event," reveals Walker.

A SOUND INVESTMENT

Sounding Sweet recently expanded to a new office in the centre of Leamington Spa, which will serve as the base for two extra audio production studios.

Add this to a boosted headcount and Sounding Sweet hopes that it is prepared for projects big and small alike.

> ***"If our client needs a particular skill set, we aim to fulfill that requirement – even if it means using external freelance support."***
>
> Ed Walker, Sounding Sweet

"Having relatively few permanent staff allows us to be both very flexible and affordable," Walker explains. "If our client needs a particular skill set to achieve the desired result, we aim to fulfill that requirement – even if it means using external freelance support.

"We can scale up and increase our head count to suit the largest of projects, we are able to do this by using our network of experienced and trusted freelancers. In this way we can offer a bespoke high-end service without having to employ specialists in each field of audio production."

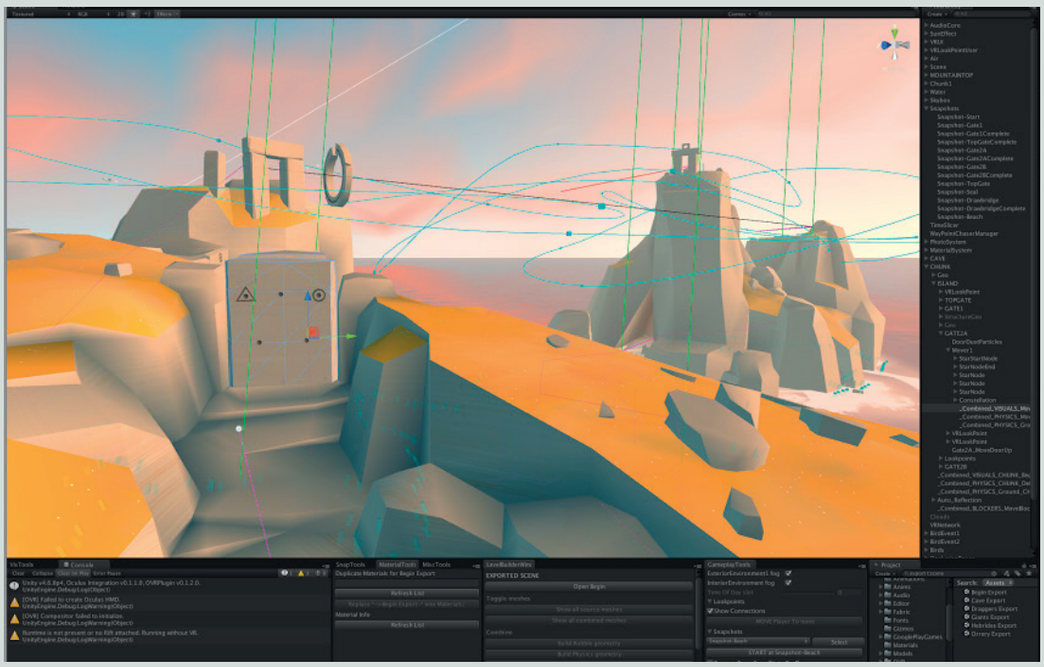
To accommodate its ability to outsource and manage any required service, Sounding Sweet utilises what it calls a 'hot studio'. Similar in concept to a hot desk, the studio allows staff and freelancers to freely use the equipment and facilities.

"Accurate monitoring spaces and acoustically isolated studios cost a small fortune to design and build – it doesn't make financial sense to use our studio spaces for tasks that don't require them," says Walker.

"We use studios for recording, mixing and critical listening and then general office space for meetings, basic editing and some types of implementation. This flexibility allows us to provide a very high quality service and standard of audio production at a competitive price."

With new premises, extra staff and a growing presence in both the world of games and beyond, it's hardly surprising Sounding Sweet is only looking up.

"We would like to start working with our clients much earlier on in the development cycle," says Walker of his plans for 2016. "However, over the last three years or so, this has improved. Getting 'in the mix' much earlier doesn't cost more and simply delivers 'sweeter'-sounding results, which benefits us and, ultimately, the client and gamer. It's a win-win situation." ■



UNITY FOCUS

Going hands-free in Land's End

Ustwo Games' Peter Pashley discusses how the studio built a VR title free from confusing controls and motion sickness

UK STUDIO USTWO Games, best known for hit mobile puzzler *Monument Valley*, has taken its first step into virtual reality with the release of *Land's End*.

The first-person puzzle game, built specifically for Samsung Gear VR, sees players exploring beautiful environments that, according to technical director Peter Pashley, have been inspired by "the islands of the Hebrides and their Neolithic heritage".

Given the stark contrast between *Land's End* and Ustwo's previous title, it's no wonder the team opted for a game engine with which it was already familiar.

"We knew that making a good VR game for the first time would be an incredibly iterative process; Unity's ease of use for level design and short design-build-test cycles made it the perfect fit," says Pashley.

"We were also aware that Unity was committed to supporting VR from a very early stage, so we were confident the engine wouldn't get left behind in the rapidly-changing VR software environment."

Pashley reports that setting up Unity for a VR project is very quick – especially in Unity 5, where it can be done by simply ticking a box. The ease of building for Android platforms in Unity made the Samsung Gear VR a smart choice when it came to end device, although the Oculus Rift can now be used with the Unity Editor to test features as you work.

A FRESH PERSPECTIVE

As this was the first time Ustwo had developed for VR, the initial work on *Land's End* was highly challenging.

"You quickly find out that you have to re-learn all your previous design principles, that any first assumptions are usually wrong, and that VR rendering is extremely intensive for a mobile phone," says Pashley.

"The biggest challenge was that no-one had ever done a game like this before. When everything you're doing – performance, input, level design, audio design, art style – is new, it takes a long time to fit all of your new approaches together into a cohesive whole."

> ***"With VR, you quickly find out that that any first assumptions are usually wrong."***
>
> Peter Pashley, Ustwo Games

The team quickly discovered that people have very different reactions to VR, which increased the need for thorough testing. Ustwo was also determined to avoid the biggest peril of virtual reality development: causing motion sickness.

"The first thing we did was to make sure we had a motion mechanic that was comfortable for players," says Pashley. "This took a long time and a lot of user testing and iteration, but we got there in the end and created something that is comfortable for most people, even the most motion-sensitive."

Control was another issue. While VR studios around the globe are experimenting with using traditional gamepads and brand new motion controllers, Ustwo opted for a far simpler solution.

KEEPING CONTROL

"We didn't want to assume that players would be familiar with a gamepad and found that using the Gear VR's side-mounted touchpad could be tiring and distracting, so we decided to do all of our interactions purely using the direction the player was looking in – so-called 'gaze' controls."

Player comfort is one of the many reasons why Pashley stresses how important testing is in VR development. He urges devs to try new features and content via the actual device as often as possible, and to test them on people from outside the dev team.

"Designing and building VR is hard but don't give up," he says. "Be creative with your solutions and you'll find something that works. Don't be precious about ideas –if it just doesn't work in user-testing then try something else.

"VR is a totally new medium which will have new genres that have never existed before. This is your chance to create something entirely fresh and define the standards of the future." ■

LAND'S END
Publisher: Ustwo Games
Developer: Ustwo Games
Platform: Samsung Gear VR
www.landsendgame.com

Ustwo Games' first priority was creating a VR motion mechanic that was comfortable for as many people as possible, recalls Peter Pashley (above)

Ask Amiqus

In our brand new regular section, Liz Prince, business manager at recruitment specialist Amiqus, helps solve some of the trickier problems job seekers face in the games industry

Q: *Dear Amiqus, how can I talk about my previous studio experience when I have had to sign ironclad NDAs which prevent me from talking about specific projects?*

NDA RESTRICTIONS TYPICALLY surround creative elements and intellectual property, in order to protect either unique concepts or the ownership of known characters and franchises.

A Non-Disclosure Agreement is put in place to essentially stop people from revealing secrets which could have an impact on the commercial success of the game. Studios have to protect themselves from the risk of lost revenue. This could occur if new ideas fall into the hands of competitors, who could then bring a product to market faster, or if a carefully staged marketing campaign was undermined by the premature leak of a new direction or reveal.

First of all, take a good look at the paperwork so you are sure what the NDA covers; you need to know what you can and can't reveal before you start.

It's easy to feel that an NDA will be a big restriction, but this doesn't need to be the case. If your NDA covers working practices this is more difficult to navigate than IP-related covenants but, with a bit of forethought, the things that prospective employers want to learn about you in a job interview can be separated away from the specifics you need to protect.

When job hunting, it's a good idea to imagine that you are in a hiring manager's shoes to get a sense of what they want to see from you. The main goal is to present your contribution to a project based on the skills and techniques that you applied during the process – rather than focusing on the end product.

Concentrate on what you can say, not what you can't. For this, you will not need to be specific about the game but you may need to think about some descriptive language to explain how your work contributed to its success. If you are unable to provide examples of your recent work you can suggest that you are happy to undertake a test to fully demonstrate your skills.

Don't forget that, as well as your skills, your responsibilities are a key part of showing your suitability for a job. Things like meeting tough deadlines, delivering assets or code, running scrum meetings, team management, mentoring, concept-generation or quality control are non-specific but can show your value.

> *"It's easy to feel that an NDA will be a big restriction, but this doesn't need to be the case."*

You can also speak about how your work fitted in with the team, what level of pressure you handled, the extent of the ideas that you contributed – rather than what they actually were – and how your performance was measured next to how you performed.

Brainstorm as much as you can, write it down and tick off what's okay to say and what needs re-phrasing. If you are preparing for an interview, you might even want to rehearse how you will describe some elements of your role so you can be confident in not putting your foot in it when you are under pressure on the day.

You may have poured a lot of blood, sweat and tears into bringing IP to life and refraining from detailing your exact involvement can be tough, especially when you are proud of the work. However, honouring an NDA is about protecting IP that doesn't belong to you so accept this fully and positively. With a bit of imagination there's plenty to say about your contribution without giving everything away.

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